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ABSTRACT

Articles in these proceedings of a conference of the Council for Programs in Technical and Scientific Communication represent the views of professional communicators and academicians who share a concern for providing breadth and quality of preparation of present and future technical communicators. The 11 articles discuss the following topics: (1) the relationship between written communication and audience, (2) the traditional graduate student's view of teaching technical writing, (3) a survey to establish curricula and courses for technical communicators, (4) technical writing and other writing courses at the University of Central Florida, (5) a survey of the writer's market and how schools are preparing students for that market, (6) staffing problems in scientific and technical communication programs, (7) technical writing and the traditional English department, (8) a model for research in written communication, (9) publicizing the technical writing program on and off campus, (10) faculty and marketing liberal arts graduates, and (11) future trends in technical communication. The conference program and a list of attendees are included. (HTH)

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Proceedings

of

The Council for Programs

in

Technical and Scientific Communication

1979

Editor

Thomas Warren

Oklahoma State University

Stillwater, Oklahoma

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CPTSC:1979
Stillwater, OK
PROGRAM

April 26, 1979
8:30 Pick up Holiday Inn, Coffee
9:00 Welcome
9:30 Audience -- Virginia Cook
10:00 Coffee
10:15 Graduate/Undergraduate programs -- Dave Carson
10:45 Retreading Traditionally-trained Ph.D's -- Gary Poffenbarger
11:30 Lunch -- Union State Room
12:45 STC Survey -- Bill Coggin
1:30 Curriculum Design/Testing -- Tom Pearsall
2:00 Technical Writing and Other Classes -- Roland Browne
2:30 Staffing Problems -- Phil Rubens, Paul Anderson
3:00 Coffee
3:15 Technical Writing in a Traditional Department -- Roland Browne
3:45 Interdisciplinary Degrees -- Paul Anderson
4:15 Return to Holiday Inn
5:15 Pick up, Warren's, Dinner

April 27, 1979
8:30 Pickup Holiday Inn, Coffee
9:00 Business Meeting
10:00 Coffee
10:15 Composition Research -- Steve Witte
10:45 Research in Technical Writing -- Dave Carson, Tom Pearsall
11:30 Lunch -- Union State Room
12:45 Publicizing Your Program -- Martha Eckman
1:30 Cooperative Education -- Larry Hynson
2:00 Internship -- John Brockman
2:30 Trends in Technical Writing -- Bob Reising
3:00 Coffee
3:15 There are always Questions
4:00 Final Business; Farewell

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CPTSC - 1979

Stillwater

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Dr. Gordon Weaver, Chairman, Department of English

I welcome you here on behalf of the University, the College of Arts and Sciences, and, particularly, our department. I know that technical writing is important from a chairman or administrator's point of view because those of you who are in English Departments, as most of all of you are, know that we have been under certain kinds of pressures, one of which has been the falling away of the traditional English major. Dealing with Deans as I do, the thing that counts with them is what they call SCH, student credit hours. It's very important to them. And we see our undergraduate and even our graduate program, as having a viable future, largely in terms of our development of technical writing. It is going well here, particularly well, it seems to me, with respect to communicating to other colleges within this University and other departments, other disciplines, the value of this kind of training. I'm sure this is the kind of thing in particular you will be discussing. We are very, very happy to have you here in Stillwater and if there is anything that our Department can do, that Tom can't help you with, feel free to call on us. We'll do anything we can to make your stay a good one. Oklahoma is not famous as a convention state because of our liquor laws, but there are ways around them, and if anybody knows them, Tom does. So welcome, I hope you have a good conference meeting. And I think I may speak for a lot of Chairmen in English Departments who aren't here: The work you are doing, the programs you are involved with, either in administrating or developing or planning, are vital to English Departments and to our future in the academic establishment. So we are very, very pleased you're here. I hope it is productive and I'll look to see you at the cocktail party. And in the meantime I hope you get some coffee. Thank you and welcome again.

"PURPOSES MISTOOK
FALL'N ON TH' INVENTORS HEADS"

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Although Horatio's comment on the tragic events in Shakespeare's Hamlet (V,ii) is not relevant in a literary sense to the subject of this paper, it does have a certain rhetorical significance. Surely, if an inventor (writer) misjudges his purposes (audience), his creation (communication) will fall'n on th' inventors head.

This paper is about verbal ecology. Ecology, of course, is the relationship between organisms and their environment. By analogy, verbal ecology would mean the relationship between written and oral communications and their environment. In this paper the definition is further delimited to the relationship between written communication and one dimension of the environment, audiences.

Despite what has been written and said about the importance of identifying audience characteristics before determining the shape and form of a particular written communication, I sense that, too often, the analysis is little more than a mechanical procedure, an application of a categorical check list. When used in this way, audience analysis becomes a superficial activity that loses its value as an integral part of the communication process. However, if categorical analysis is related to strategies, or design, or intention, it helps illuminate ways in which language patterns affect rhetorical objectives. As Barbara Harris has said, "What we want students to do is not just to write well for some ideally imagined uninformed audience, but to gauge as intelligently as they can in every case the degree of their audience's information, and to write to that audience." (p. 631)

Students, then, should be encouraged to identify as many specific characteristics as possible about an intended audience in every case in order to make intelligent, rational rhetorical decisions about how to present information. As Kinneavy has observed, ". . .information is not information to somebody, what is information to one audience is not information to another . . . it must exist in sufficient context to be meaningful, and it must . . . not be self-evident." (p. 93)

Many students have difficulty comprehending the relationship between audience and use of stylistic elements. It is not easy for them to understand that language symbols and how they are structured reflect

attitudes and intent. Many are not aware that rhetorical style should mirror a writer's perception and assessment of his audience. They do not know that even within grammatical constraints, a writer makes structural and semantical choices that he thinks will achieve his purpose. We need to help them learn that "Language is not a purely passive instrument . . . (that) while you are doing something with it, it is doing something with you, or with your intention. It does not exactly fight back; rather it has a set of postures and balances which modify your thrusts and holds . . . friction occurs whenever a given unit of the system of grammar is tending to say one thing while the semantic meaning and the general organization are tending to say another." (Weaver, p. 270) Students need to be made aware that language is active, and its user must be sensitive to its inherent strengths and mobility lest it subtly lead the reader in a direction not intended. They should be reassured that unlike Lewis Carroll's prodigious Humpty Dumpty, we are not all, inherently, masters of the temperamental elements of language, but we can learn to be.

We instructors must assume some of the responsibility for the indifference to language we often encounter among students. In technical writing, for example, we tend to rely on rigid interpretations of word-concepts, and have a preoccupation with objective criteria that may well preclude the important dimension of relationships among variables in the communication process. We sometimes stress objectivity and rigor at the expense of holistic value. "The needs of our actual life are so imperative that the sense of vision becomes highly specialized in their service. With an admirable economy we see only so much as is needful for our purposes; but this is in fact very little, just enough to recognize and identify each object or person; that done they go into our mental catalogue and are no more really seen. In actual life the normal person really only reads the labels as it were on the objects around him and troubles no further. Almost all the things which are useful in any way put on more this cap of invisibility." (Langer, p. 238)

To help lift this "cap of invisibility," I suggest we need to be more sensitive to our immediate audience: our students. What do they know about the complexities of the communication process when they come to us? Usually, very little. Before they can begin to understand it, and before we can expect to sensitize them to others' needs, we must be sensitive to theirs.

When did you last think of your students as the audience for a communication process in which you are actively involved (the classroom)? When did you last adjust your strategies and rhetorical objectives to their need for information and their capabilities? Many of our students have a residual negative attitude toward writing because of unpleasant prior experiences. Some have avoided any kinds of communications courses, and thus, are weak in basic skills. They are fearful and anxious. They may be passively or actively hostile. Some consider a course in technical writing extraneous, as neither a course relevant to their major, nor a "real" humanities course. They are not sure what it has to do with their future endeavors. On the other hand, there are always students who like to write, who are competent and confident, as well as those who are eager to learn and improve. In

every case, they are a mixed group. I suggest that we should be constantly aware of and respond to the changing dynamics within student groups. This, of course, means we must be open and flexible within the obvious constraints of realistic course objectives and time limitations. But, if we are telling our students that the way to develop effective written communications is by understanding the relationship between audience needs and expectations and rhetorical strategies, then it seems reasonable that we should practice what we teach. As we assess our audience, we should help our students assess theirs by using audience analysis in technical writing as a cohesive strategy ". . . for the difficult, necessary task of learning to adjust vocabulary and other stylistic elements to an audience with tact, humility, and appropriateness--but without hypocrisy, without being false." (Hall, p. 31)

To illustrate how the relationship between audiences and various technical communications may be developed as a cohesive strategy in a basic technical writing course, I have assembled a number of sample assignments. They have been freely adapted from other people's suggestions, and from various texts and articles. I hope they will be especially useful to people who are just beginning to teach courses in technical writing. Audience analysis is the focal point of each assignment, and it is from the analysis that rhetorical strategies and choices evolve. Although each assignment is useful and demonstrates different elements of the process, it is the cumulative value of using audience analysis as a unifying strategy that results in fewer mistakes ". . . fall'n on th' inventors heads."

SUGGESTED ASSIGNMENTS

An Initial Assignment

Hand out a bibliography of books on technical writing available in your library. Assign specific books to individuals or place selected books on reserve. Ask students to: 1. examine the table of contents, 2. read the first chapter (or whichever chapter defines and describes technical writing, 3. read the chapter on audience analysis. Ask students to write: 1. the definition of technical writing in the library book and the definition in their text, 2. a list of similarities and dissimilarities between the library book and the text. Tell them to be prepared in the next class period to discuss: 1. what they have discovered about technical writing, 2. how technical writing differs from other types of writing, and 3. what they perceive the role of the audience to be, that is, the relationship of the audience to written communication.

Journal Article Analysis

Bring various magazines to class: Scientific American, Technology Review, Smithsonian, New Yorker, Harpers, Atlantic Monthly, Road and Track, and other magazines and journals in special fields. (If you do not have magazines available, ask students to bring

them.) The purpose of this assignment is to identify the type of audience for whom the magazine is intended by examining various elements, some of which are: the cover (title, publication dates, design), table of contents, circulation information, advertisements, letters to the editor, editorials, type face, layout, graphics. Students may work individually, but it is preferable to have them work in groups of 3 or 4, with each member of the group examining a different issue of the same publication. (Advantages: initiates within group dynamics, and friendly competitive inter-group spirit. When used early in the course, this activity promotes a relaxed environment, and reduces anxiety.) This activity is used over a period of several weeks. On the first day, students work together for a specified period of time. Then each group identifies the intended audience for the publication it has examined, and must give evidence to support its conclusion. Encourage other groups to question and challenge the evidence.

Subsequent analysis of specific articles are related to reading assignments in the text and discussions. Use the articles by having students examine organizational features (titles, abstracts, introductions, conclusions, thesis sentences, paragraph development, transitions, subtitles); language level (vocabulary, abstract vs concrete language, sentence length, types of sentences, transitions, coherence devices, paragraph length); rhetorical devices (comparison/contrast, causal analysis, examples, etc.) and graphics. All these features are examined, of course, in relation to the intended audience. By having groups analyze different types of magazines, they begin to develop a sense of how different authors have made rhetorical choices appropriate to different audiences.

The culmination of this activity is to ask each student to select an article written about a technical or scientific subject and to identify the audience for whom it is written by examining all the previously mentioned features. This will test the student's ability to transfer information and apply it. WARNING: This part of the assignment is time consuming for the instructor, since each article must be read carefully before the student's analysis may be fairly evaluated. (The student must attach a xeroxed copy of the original article to his paper.) ALTERNATE: Select one issue of a magazine (Specific American, for example). Have all students work with the magazine and do the final assignment on a specific article in the magazine. This method will reduce the time it takes to evaluate the analyses considerably.

Rewrite a Journal Article

For this assignment ask the students to select an article on a technical or scientific subject that is close to the upper limits of their comprehension. Have them write a paragraph or two identifying the audience and justifying their conclusion. Next, have them rewrite the original article for a different type of audience.

Give them suggestions for age ranges, educational backgrounds as well as other demographic information. Use a classroom period as an exploratory/planning session during which students will select a specific type of audience and will consider various rhetorical possibilities for developing the paper. Encourage students to articulate their ideas and seek feedback from others. Interact with students, but avoid making decisions for them. Suggest that they ask a representative person in the audience they have selected to read the rough draft or finished paper and make comments. This is usually a stimulating assignment that demonstrates quite dramatically the kinds of rhetorical decisions that must be made to adjust information for different audiences.

Preliminary Proposal (for a major report)

Regardless of the type of major report you may ask your students to write, it is a good idea to assign a preliminary proposal. In addition to other obvious advantages, it forces the student to select an audience category. Research on the topic will be easier for the student if possible materials are reviewed in relation to a specific audience context. If the student tells you he wishes to write for the intelligent but uninformed lay reader, insist that some demographic information be given: educational range, rural/urban background and so on. It often helps to ask the student to express reasons why the subject would be of interest to the intended audience and to have them explain the direct and indirect relationships.

Progress Report (on the major report)

By the time you call for a progress report, the student should have completed much of the necessary research. In addition to defining the scope and plan of development, the student should have enough information to give you a more detailed audience analysis. Ask the student to consider how technical jargon, interpretation of data and statistics and abstract concepts will be treated in the final report. Ask what kinds of rhetorical devices will probably be most useful and why. What kinds of graphics will be included and why?

Sometime during the period that students are preparing a major report it is useful to have them discuss their plans orally or to exchange rough drafts of what they have written. In heterogeneous groups, especially, each student is a different audience and can often give perceptive, helpful suggestions.

Mechanism and Process Descriptions

Whether these descriptions are given as separate assignments or are combined, it is very important that students do a preliminary audience analysis. The treatment of the material, how it is developed and expressed, will be influenced by whether the descriptions are instructions for the neophyte, the technician or the skilled amateur, or if they are general descriptions for

different groups of lay readers, professions or decision makers. They may be objective/informative, subjective/persuasive, or both. They may be structural, functional or essentially relational. The audience should be determined in advance either by the instructor or student, so the descriptions will be appropriately developed to elicit the kind of response intended.

Oral Reports

As a final assignment, have students give an oral presentation on their major written report. Because of time constraints, these presentations will usually be 10-12 minutes long. The audience will usually be the other students in the class, probably a heterogeneous group. It is likely that they will not have the same information as the intended reader(s) of the written report. To speak to this different audience, the presenter will need to select and organize the material carefully so major premises and conclusions will be clear. Technical jargon should be avoided or definitions should be given. Strong reliance on examples, analogies and clear reasoning should be encouraged. Require that visuals be used. If tables, graphs and diagrams are adapted from the original paper, help students figure proper proportions so the information may be seen and read easily by everyone in the room. Encourage demonstrations and audience involvement.

Miscellaneous (Quizzes, In Class and Take Home Activities)

There are several short assignments that may be used to emphasize and reinforce the relationship between stylistic elements and audiences. Two assignments are listed below as examples.

1. Give students a selection of words: abstract, concrete or both. Ask them to write definitions of any one word for three different readers: a nine year old, a high school student, a business executive (there are obviously many possible combinations). Then, ask them to expand the definition for any one of the three readers by using examples, comparison/contrast, deductive/inductive reasoning and so on. (Emphasize one, two or a combination.)

2. Design several problems that include statistical data. Ask students to develop graphic representations of the data (tables, line graphs, etc.) that will be most appropriate for a specific audience. Require a short paper in which the data are interpreted, and a justification is given for why a particular type of graphic was chosen for the selected audience.

Conclusion

The types of sample assignments suggested here, it should be emphasized [illegible] are for a basic technical writing course typically offered in the junior division. If you also offer an advanced course, the addition

of coordinated projects with other academic departments and industries and agencies in the community is exciting and productive.

Above all, remember your audience: your students. Keep them actively involved in a rich variety of experiences that make clear that communication objectives can be realized through the intelligent choice of rhetorical strategies and stylistic elements appropriate to various audiences. We are all concerned about the quality of our environment; let us make a responsible contribution to that environment through our commitment to verbal ecology.

ADDENDUM

The oral version of this paper, presented at CCCC in Minneapolis, 1979, was quite different from the written version. The oral presentation consisted of a slide set with commentary which emphasized students as the audience in a classroom setting. The oral presentation was repeated in Stillwater at Tom Warren's request. The written version is scheduled for publication in the Technical Writing Teacher in the winter of 1981.

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Gary C. Poffenbarger

The Traditional Graduate Student's View of Teaching Technical Writing: To Retread or Not!

When I was first asked to speak about my experiences of being trained, or if you will, re-trained, as a teacher of technical writing, I had misgivings about representing myself as a full-fledged, totally converted student or teacher --a retread, that is-- one who had completely and conclusively abandoned the realms of the world of literature for the halls of science and technology. I <u>am</u> a dedicated teacher of technical writing. However, I am also a divided being, for I love the teaching of literature and do not want to totally divorce myself from that field. Consequently, my conversion and adaptation to the role of technical writing teacher has not been the easiest transition. I have tried to avoid alienating myself from the world of the humanities and literature. I consider that too great a sacrifice after having initially spent nearly six years of my adult life studying to become a teacher of literature.

Do I have to make a choice between the two teaching careers or can I resolve the conflict by teaching both? I believe the latter is possible some time in the future. At present my goal is to teach technical writing after I graduate with my Ph.D. My commitment to the teaching of technical writing is very strong; I encourage the need for good writing in all disciplines. Yet, I have a conflict within me: the humanist in me is fighting the technologist. Am I a basically humanistically-oriented individual trying to teach (and learn) technical matter in order to convey it to my students, or am I a basically technology-oriented person trying to bring a humanistic orientation to the technical material I present? This dichotomy is not unique -- many of you have experienced it just as today many traditional students of literature experience the conflict when they attempt to teach technical writing for the first time. The conflict is difficult to resolve, and I do not believe that experienced teacher-trainers completely help the new teachers to adapt and obtain a "peace of mind" toward a subject which may at first be extremely alien to them.

Today, I want to speak to you about those conflicts or problems of

philosophy and psychology that erupt in the minds of traditional literature students as they are being trained as teachers of technical writing. Many of you members of the Council for Programs in Technical and Scientific Communication, as directors and coordinators of programs in technical writing, are fully aware of the practical and instructional requirements needed for training a teacher for a technical writing teaching position. Texts, sources, visual aids, and many pedagogical concerns are well developed and explored in a training seminar or course. However, the psychological needs of the new teacher are often overlooked. By psychological needs, I refer to the mental preparation of the individual for the impact of new, foreign subject matters never before explored; the continual motivation needed when unique, frustrating material is approached; the sincere dedication one must develop toward constantly learning and experimenting; the disappointment and frustration that may develop when one realizes the additional time that must be invested in learning those diverse subjects. The list goes on and on. The director or coordinator may assume that the new teacher is happy and satisfied with the new subject matter. But in reality that new teacher may be disappointed and feel ignorant or uninformed. Just because one knows how to correctly write a report or produce a mechanism description, does not mean that the same individual can communicate fully with a heterogeneous class of technical writing students. The new teacher may receive a blinding revelation that one can no longer control the total subject matter of the course as one was able to do in a composition or literature course. Yes, this revelation may expose the teacher to the requirement of adaptation -- that is, to the continual probing and learning of new material, the subject matter of the students' majors.

The new teacher can not "go it alone" in struggling with this adaptation. If he or she is going to succeed, the director and other experienced teachers will have to provide help. After two years of teaching technical writing, I

personally know that my adaptation is not complete -- I still have a long way to go and a great deal to learn. All learning should be a continuous experience. Yet, there is an interesting difference between technical writing and other disciplines of writing such as composition. Obviously, all writing is dynamic, not static. However, composition and literature appear to have a more clearly defined boundary of subject matter. Technical writing is unique: the teacher may have such a variety of students in a heterogeneous class that he or she must "bone up" on a large number of subjects. This means more work for the teacher; one must familiarize himself with new, complex material. New teachers are not always prepared for this constantly shifting "frontier of knowledge." It often overwhelms and discourages the new teacher.

As I stated earlier, my adaptation is by no means complete. I do understand the amount of continuous research demanded in order for one to be a good technical writing teacher. And as I mentioned at the outset of this talk, I am a divided being. I am still very much a student/teacher of literature in addition to being a student/teacher of technical writing. This embattled state of mind also exists, I believe, for many former traditional students of literature who are training in technical writing. They ask: "Do I want to teach technical writing and forfeit all those years of literature training? Or do I want to leave my options open and possibly teach both subjects in the future? If I choose to try and teach both subjects, can I truly be considered a totally committed individual to the teaching of technical writing?" The traditional literature student ponders these questions as he makes his transition to the new role of technical writing teacher. For myself, I still ask these questions periodically. I know I want to teach technical writing after I graduate.

I realize that a number of you individuals in this audience were originally trained as teachers of literature and the humanities, and that you have gone through the process of conversion and retreading (in most cases self-training) in order to become teachers of technical writing. Some of you may have a natural

affinity to technical writing, while others of you have experienced difficulty adjusting to the conversion. Moreover, in the final outcome, all of you have found technical writing a rewarding career. All of you are now dedicated teachers; some of you also have dual roles in your departments -- you teach both technical writing and literature courses. This ideal situation is my personal goal for years from now. Today I want to focus my attention and research on technical writing because I truly understand how practical and useful its value is in teaching the young people. I want to teach the courses because I personally need to bring a humanistic viewpoint and awareness to those technology and science students I teach.

Why do I provide you with my conflicting attitudes and feelings? Because many of the graduate students in literature are selecting the teaching of technical writing as a valid, worthwhile occupation. Whether those individuals become full-time teachers or become part-time teachers, they are going to experience problems and conflicts similar to my own situation. You must guide them but not coddle them. It is going to take some time before universities fully develop adequate programs for the training of technical writing teachers at the graduate level in order to produce Ph.D's (strictly in technical writing). Until then, the retreads (converters and adapters) must be shown that they are not just teachers of a specific discipline, but rather <u>renaissance</u> people, individuals who constantly search and learn as much as they can about a wide variety of subjects. I have seen some individuals attempt to teach technical writing with the expressed philosophy that one need know little about the students' major fields of study, that one can side-step problem situations inherently founded in <u>discipline</u> problems. Any experienced technical writing teacher knows this can not be done -- one has to confront new subjects and learn as much about them as possible. I believe this is why some people give up teaching this field after one semester or one year. They feel uncomfortable

since they discover they can not rely only on their texts and visual aids, for instance; they must answer difficult questions about unfamiliar subjects. And some people are just not willing to invest the time and effort. Those of us who are willing to try to become renaissance teachers must fully understand that as we search and question, especially in the classroom in front of our students, we will sometimes falter or fail and consequently feel embarrassment. The retread teacher of technical writing needs to be aware of these obstacles.

What I have been trying to express here is that your responsibility as directors or coordinators of technical writing teachers goes beyond the realm of pedagogical concerns. You must in some respects become psychological counselors or directors -- you must ease the retread into a completely new world of writing, one that is even very different from that of composition. I urge you to use or suggest the typical types of help:

*sound courses in how to teach technical writing

*special training sessions

*the use of summer institutes

*conferences and pre-convention workshops

*general guidance with pedagogical concerns in mind.

But also you directors must consider the following actions:

*be concerned with the retreads' motivation

*be concerned with the retreads' dedication

*encourage new teachers to read in other disciplines

*possibly administer diagnostic tests to determine if the new teacher is adaptable

*have more personal conferences to avoid teacher alienation

*encourage the retreads to talk to instructors in other fields and to talk to "real world" professionals

*encourage the retreads to sit in on other university courses (i.e. computer science).

Most of all, show your sympathy and share your own experiences with the new teachers. Show them that their problems of adaptability are not unique, that you have experienced the same problems, that you have at times tried and failed. The traditional student can not retread on his own; he needs both educational guidance and psychological guidance and moral support in order to fully explore his potential as a good teacher of technical writing.

A REPORT ON THE 1977 STC SURVEY

by

Bill Coggin

BACKGROUND TO THE SURVEY

Teachers and administrators for various educational institutions who wanted information on establishing better programs for students asked STC's Curriculum Development subcommittee for help. The subcommittee was asked specifically to provide information on establishing curricula and courses for technical communicators.

To gather the information these people sought, Richard E. Wiegand, Sundstrand Industries, Rockford, Illinois, a member of the subcommittee, prepared a questionaire to send to members of STC. The questionaire was designed to gather information which would help the subcommittee

1. develop a curriculum in technical communication that could be used in the development of new courses or curricula, and

2. provide information to support the need for more courses/curricula.

MY INVOLVEMENT WITH THE SURVEY

Wiegand intended to conduct the survey, have the data computer tabulated, then interpret the data and present the results via an article in Technical Communication. Owing to other time commitments, Wiegand was not able to follow through with the presentation of the results. Thus, because I am involved in both technical writing and curriculum development, I agreed to interpret the computer data and report them.

PURPOSE OF THIS PAPER

My intent in reporting the results of the survey is to offer support for those who are trying to establish programs, design courses or curricula, justify existing programs or add or delete courses from existing programs. The paper, therefore, is intended to be descriptive and informative.

DESCRIPTION OF THE SURVEY

The survey consisted of 23 questions. The first six questions were designed to solicit personal data. The areas of personal data included major job functions, primary work areas, highest educational level attained, major area of study, years of experience as a technical communicator and ways of entering the field of technical communications.

The other 16 questions were designed to find out if these professional technical communicators believed educational programs were necessary for preparing technical communicators. And, if they were, what **kinds** of educational experiences and course subject areas would offer the best preparation.

RESULTS OF THE SURVEY

There were 886 responses to the survey. Because of the large number of responses I believe we can draw two conclusions immediately:

1. professional technical communicators are very interested in seeing that future technical communicators are well prepared for their jobs, and

2. these professional technical communicators are interested in cooperating with educators and program developers who have the responsibility of training the future technical communicators.

Most of the responses to the questionnaire came from managers, writers, editors and educators (87%) (see Table I). However, there were responses from people with job functions as varied as engineering, consulting, illustrating, graphic designing and sales. Among all groups responding, most worked primarily in technical writing, procedure manuals or report writing, had 16-20 years experience in the field, had studied either English or engineering in school, and had entered technical communications from school or engineering positions. And most had at least a bachelor's degree (see Table II).

The other 16 questions and responses are best understood when grouped into three categories. The first category (questions 7, 22, and 8) seeks to find out if any kind of educational program better prepares the entry level technical communicator than on-the-job experience (#7). 73.8% of the respondents said that educational programs were indeed better preparation than on-the-job experience. To reinforce this response, 85.4% said that more schools should offer technical communications degrees (#22). And, 48.9% of those surveyed said that the entry level technical communicator should have at least a bachelor's degree (#8), while 24.3% believed an associate degree is sufficient preparation (see Tables III and IV).

The next group of questions (#'s 9, 15, 21) were designed to find out what kinds of academic experience were more important for the technical communicator (see Table V). 60% of the responses indicated that academic experience in both science/engineering and written/graphic communications areas were equally important (#9). In addition, 80.3% believed that in the noncommunication subject areas, a degree in technical communications should include courses in several technical areas to give the

student a more concentrated background (#15). And, more than half (54%) believed that a degree in technical communication should include communication-type courses with equal amounts of theory and methods (#21).

The third group of questions (#10-14) and (16-22) asked the respondents to name specifically noncommunication subject areas and specific communication subject areas that a degree in technical communications should include (see Table VI). The five noncommunication subject areas most named were:

1. Engineering
2. Mathematics, including Computer Science
3. Business
4. Physical and Natural Sciences
5. Humanities

The five specific communication subject areas most named for inclusion were:

1. Editing
2. Communications Research Methods
3. Technical Drawing
4. Business Communications
5. Printing, Bindery, Platemaking, Distribution (#16-20)

CONCLUSION

Three major conclusions can be drawn from the survey:

1. There is support among professional technical communicators and educators for existing technical communications programs. And, the consensus is that there is a need for more.

2. Existing and future programs should include subject areas which give experience in both science/engineering and written/graphic communications. In addition, the noncommunication subject areas should include courses in several technical areas to give the students a broad background and the communications courses should include equal amounts of theory and methods.

3. Specific noncommunications courses should include, the following order, courses in:

   A. Engineering
   B. Mathematics

C. Business
D. Physical and Natural Science
E. Humanities

Specific communications course areas should include, in order:

A. Editing
B. Communications Research Methods
C. Technical Drawing
D. Business Communications
E. Printing, Bindery, Platemaking, Distribution

Table 1—Occupational Groups Responding to Survey

Group	Number Responding	Percent of Total
Managers	257	29.1
Writers	255	28.9
Editors	179	20.3
Educators	77	8.7
Others	115	13.1

"Others" includes consultants, technical illustrators, salespersons, graphic design artists and a category labeled "other."

* All fractions have been rounded to the nearest whole percent in the text of the paper.

** For the purposes of this survey "technical writing" means any kind of writing not specifically named (see the list below "Primary Work Area" in Table 2 for those that are named).

Table 2—Descriptive Data on Survey Respondents

Primary Work Area			Experience		
Area	Number Responding	Percent of Total	Years	Number Responding	Percent of Total
Technical writing	264	30.2	31—	51	5.8
Procedure manuals	133	15.2	26–30	57	6.5
Reports	125	14.3	21–25	131	15.0
Teaching	58	6.6	16–20	161	18.5
Other (unnamed)	91	10.4	11–15	154	17.7
			7–10	113	13.0
			5–6	69	7.9
			3–4	92	10.6
			1–2	44	5.0

Specific work areas named in the survey but totaling less than 6.6% of the responses include proposals, articles/journals, specifications, catalogs and parts lists, in-house publications, photography, commercial art, advertising copy, information retrieval, textbooks, technical films, promotional materials, training programs, technical art, and radio/television.

Major Area of Study			How Entered Field		
Area	Number Responding	Percent of Total	From	Number Responding	Percent of Total
English	211	24.0	School	198	22.5
Engineering	209	23.8	Engineering	179	20.3
Science	121	13.8	Manufacturing, science or consulting	165	18.7
Art, business, education, law, medicine	111	12.6	Teaching	123	14.0
Journalism	78	8.9	Other (unnamed)	216	24.5
Other (unnamed)	150	17.0			

General Education Level

Level	Number Responding	Percent of Total
High school	34	3.9
Tech/trade school	40	4.5
Business school	8	0.9
Associate's degree	70	7.9
Bachelor's degree	411	46.5
Master's degree	216	24.5
Doctorate	68	7.7
Other	36	4.1

Educational Level by Job Function

Level	Job Function (Number Responding)			
	Managers (257)	Writers (255)	Editors (179)	Educators (77)
High school	3.9%	3.5%	3.9%	0.0%
Tech/trade school	4.3%	5.5%	2.2%	0.0%
Business school	2.3%	0.0%	0.6%	0.0%
Associate's degree	8.9%	9.0%	7.3%	0.0%
Bachelor's degree	45.9%	63.1%	47.5%	7.8%
Master's degree	26.8%	13.7%	27.4%	48.1%
Doctorate degree	3.1%	3.5%	7.3%	41.6%
Other	4.7%	1.6%	3.9%	2.6%

Table 3—Preparation—Education or On-the-Job

Question 7: Do you believe any education program in technical communicatioas will better prepare an entry-level technical communicator than on-the-job experience?

Total Responses

Choice	Number	Percent
Yes	627	73.8
No	223	26.2

Response by Job Function

Job Function	Number	Yes (%)	No (%)
Managers	248	73.4	26.6
Writers	246	76.0	24.0
Editors	172	66.9	33.1
Educators	75	84.0	16.0

Question 22: Do you believe more schools should offer technical communication degrees?

Total Responses

Choice	Number	Percent
Yes	717	85.4
No	124	14.6

Response by Job Function

Job Function	Number	Yes (%)	No (%)
Managers	246	85.4	14.6
Writers	239	89.1	10.9
Editors	171	80.1	19.9
Educators	74	83.8	16.2

Table 4—Preparation—Minimum Education

Question 8: What general level of education, regardless of the specific course area, do you believe is the minimum required for an entry-level technical communicator?

Total Responses

Degree	Number	Percent
High school	74	8.4
Technical/ trade school	119	13.5
Business school	4	0.5
Associate's	214	24.3
Bachelor's	430	48.9
Master's	14	1.6
Doctorate	2	0.2
Others	22	2.5

Most Frequent Responses by Job Function

Degree Required	Job Function (Number Responding)			
	Managers (257)	Writers (255)	Editors (179)	Educators (76)
High school	10.9%	7.5%	8.5%	1.3%
Technical/ trade school	15.2%	17.6%	7.3%	5.3%
Associate's	22.6%	31.4%	15.8%	25.0%
Bachelor's	47.9%	39.2%	63.8%	64.5%
Master's	0.8%	1.6%	1.7%	2.6%
Doctorate	0.0%	0.0%	0.0%	0.0%

Table 5—Type of Preparation—General

Question 9: What educational experience do you believe is more important for an entry-level technical communicator?

Total Responses

Choice	Number	Percent
Science/engineering	132	15.1
Written/graphic communications	210	24.0
Both are equally important	533	60.9

Response by Job Function

Choice	Job Function (Number Responding)			
	Managers (246)	Writers (244)	Editors (266)	Educators (75)
Science/engineering	18.4%	15.4%	11.4%	6.5%
Communications	23.0%	23.2%	27.8%	29.9%
Both equal	58.6%	61.4%	60.8%	63.6%

Question 15: Relating to noncommunication-oriented course areas, should a degree in technical communication include several technical areas for a broader background or one or two technical areas for a more concentrated background?

Total Responses

Choice	Number	Percent
Several technical areas	696	80.3
One or two technical areas	171	19.7

Response by Job Function

Choice	Job Function (Number Responding)			
	Managers (254)	Writers (248)	Editors (177)	Educators (76)
Several tech. areas	79.1%	78.2%	84.2%	69.7%
One or two tech. areas	20.9%	21.8%	15.8%	30.3%

Question 21: Should a degree in technical communication include communication-type courses with more theory or more methods?

Total Responses

Choice	Number	Percent
More theory	51	6.0
More methods	337	39.9
Equal amounts	456	54.0

Response by Job Function

Choice	Job Function (Number Responding)			
	Managers (246)	Writers (244)	Editors (166)	Educators (75)
More theory	8.9%	5.3%	4.2%	8.0%
More methods	40.2%	42.2%	44.0%	37.3%
Equal amounts	50.8%	50.8%	51.8%	54.7%

Table 6—Type of Preparation—Specific

Questions 10–14: What types of noncommunication-oriented course areas do you believe a degree in technical communication should include? (There were 26 specific types of areas which group generally into the following five types.)

Type	Number Responding	Percent of Total
Engineering	294	33.9
Mathematics (including computer science)	176	20.4
Business	136	15.4
Physical and natural sciences	123	14.2
Humanities	50	5.6

Questions 16–20: Which of the following more specific communication course areas do you believe a degree in technical communication should include?

Area	Number Responding	Percent of Total
Editing	183	21.1
Communication research methods	94	10.9
Technical drawing	92	10.6
Business communications	74	8.5
Printing, bindery, plate-making, distribution	70	8.1
Technical/science writing	65	7.5

8 December 1980

Professor Thomas L. Warren
Department of English
Oklahoma State University
Stillwater, Oklahoma 74074

Dear Tom,

Thanks for the opportunity to revise my remarks for the 1979 CPSTC Proceedings. As you may remember, most of the information I presented in my talk resulted from information gathered in a research project sponsored by our program. That research has since been published; so, rather than revise my remarks, I'll recommend to readers of this proceedings that they see Earl E. McDowell, L. David Schuelke, and Chew Wah Chung, "Evaluation of a Bachelor's Program in Technical Communication," Journal of Technical Writing and Communication, Volume 10, Number 3, 1980.

Sincerely,

Signed/Tom
Thomas E. Pearsall
Professor and Head
Technical Communication Program
University of Minnesota

TECHNICAL WRITING AND OTHER WRITING COURSES

From its inception in 1968, the University of Central Florida--formerly Florida Technological University--offered two degree options in English: a traditional degree in literature, and a second in creative writing. Most of my work has been connected with the latter.

The origianl program in writing, following the tradition of such schools as Iowa and SUNY Buffalo, concentrated on fiction and poetry. Neither genre had much connection with technical writing, which we also offered.

Because my own professional experience as a writer had largely been confined to the area of non-fiction--what I prefer to think of as factual writing--I began offering courses in how to produce such forms as the article, profile, and critical review for a popular audience rather than academic or professional readers.

These courses found a ready acceptance by students in many disciplines other than English, and we now have sufficient offerings at Junior and Senior level so that a student may specialize in non-fiction writing. The demand has been sufficient so that the courses are now taught by two of my colleagues as well as myself.

As I have tried to demonstrate in the accompanying article from the CEA Forum, I am convinced that non-fiction has become the most popular reading fare in the United States, far exceeding both fiction and poetry in general acceptance. Consequently, I believe that it behooves schools that teach writing to offer competent instruction in writing non-fiction.

There is, I believe, a considerable communality between technical writing and non-fiction writing. Both must rely for their effectiveness upon a basic respect for truth and facts, without which neither can survive. A competent teacher of technical writing, if he is of a literary bent, should not find it too foreign to his experience to become effective at teaching non-fiction writing: he will already have the fundamental attitudes and mental habits required. Assuming that he can develop an engaging style suitable for a lay audience and can master the anatomy of such forms as the article and profile, he should have little trouble.

Roland A. Browne

BUGGY-WHIP MAKING 301 and 302

Since 1968, when the university opened its doors, I have been concerned with the development of the creative writing program at Florida Technological University in Orlando. Our basic program, which has evolved gradually over the past ten years, at first followed essentially traditional lines: courses and workshops in fiction and poetry leading to a bachelor's degree in English. A student might specialize either in fiction or poetry.

For the first three or four years, we offered one course in advanced expository writing, which received unusually good student acceptance. From this beginning, about six years ago, I began developing a third track in nonfiction writing, my own specialty, designed primarily to teach students to produce articles and other nonfiction pieces suitable for publication in the popular magazine press. We now offer up to two full years of upper-division instruction in this area and permit students to specialize in it. Results, on the whole, have been encouraging. The program has had wide acceptance in the university, not only by students majoring in English, but also from such areas as humanities, history, sociology, education, journalism, art, music, psychology, natural sciences, and pre-law. For whatever reason, the courses appear to satisfy a felt need, and we anticipate continued growth in this field.

In part, my interest in teaching nonfiction writing stemmed from my own experience as a professional writer. Over the years, I had a growing sense of the dwindling of fiction and poetry as workable, saleable media, and the constant increase of nonfiction forms, particularly the article and the in-depth profile, as the mainstays of magazine journalism.

No doubt some of the decline of fiction forms, such as the short story, is attributable to television. I can remember well the period between the two world wars when Americans eagerly awaited the arrival of each week's issue of Saturday Evening Post or its major popular rival, Collier's. Each typically ran about four short stories per week; between the two, about 400 stories per year appeared in print. And this is not to mention the stories published in Atlantic, New Yorker, Harper's, Scribner's, Ladies Home Journal, Red Book, Blue Book, and scores of other popular magazines. Subscribers to the Post eagerly watched for the next Guy Gilpatric tale about Colin Glencannon and the S. S. Inchcliffe Castle, or an Octavus Roy Cohen yarn about Florian Slappey, or the next Booth Tarkington story about Penrod, with the same faithful avidity as the present generation tunes in weekly to Charlie's Angels or M*A*S*H.

And the last poet I can recall who really captured the public's reading fancy was Stephen Vincent Benet with John Brown's Body and Western Star. Has poetry, I wonder, with the general abandonment of rhyme and predictable meter, largely cut itself off from the common man?

I think Americans now read less for pleasure and more for information, turning to cinema and television for entertainment and escape. If this is the case, should not creative writing programs take account of it in devising courses of study?) Is it reasonable to put major emphasis on training would-be writers in the crafts of fiction and poetry if there is no longer a sizeable market for either? For that matter, is it professionally responsible?

Recently, plagued by these questions, I undertook a research project in search of answers. Each year, the Writer's Digest in Cincinnati publishes The Writer's Market, which has long been the free-lancer's bible. Publishers of books, journals, magazines, and newspapers submit information about their editorial preferences and taboos, rates of payment, and and so on. The content of each entry is determined by the individual publisher, rather than by the editorial staff of Writer's Digest. It seemed to me that a reasonably accurate assessment of the present market could be obtained by tabulating the expressed preferences of the publishers listed in Writer's Market. I therefore made such a tabulation of the 1977 edition, which yielded some rather surprising results.

I recorded expressed publisher interest in four categories of material: nonfiction, fiction, poetry, and photographs. It would be tiresome to recapitulate all of the data that I gathered in tabulating the responses of 3131 publishers listed in Writer's Market. (I eliminated vanity presses, since they will publish virtually anything, saleable or not, if the author pays for it.) I am in process of reducing all of these data to charts, and when I finish, will be glad to send copies to any curious reader. I believe, however, that some of my major findings will be of general interest, and offer them below.

United States, Canadian, and foreign publishers of books, as opposed to periodicals, in all 551 firms, expressed the following degree of interest: nonfiction, 78%; fiction, 30%; poetry, 6%; fiction and photographs, 1%.

There were listed 660 special interest journals involving trades, technical subjects, or professions. Their interests were as follows: nonfiction, 100%; fiction, 3%; and photographs, 75%.

Of 37 company publications, the expressed interests were nonfiction, 97%; fiction, 8%; poetry, 0%; photographs, 97%.

Of 26 animal publications (magazines devoted to dogs, cats, tropical fish, horses, etc.) 100% were interested in nonfiction and 92% in photographs, against 31% in fiction and 27% in poetry.

There were listed 49 so-called "alternative publications," magazines like Rolling Stones, having an appeal to youth in general and to those opposed to the establishment in particular. Their expressed interests were nonfiction, 100%; fiction, 53%; poetry, 59%; and photographs, 71%.

This nation is the leading agricultural country in the world. There were listed 68 farm publications, whose interests were as follows: nonfiction, 100%; fiction, 6%; poetry, 6%; and photographs, 91%.

Of North American newspaper syndicates, 64 were listed. Their interests were nonfiction, 91%; fiction, 16%; poetry, 5%; fiction and photographs, 47%.

General interest publications, such as Harper's, New Yorker, Atlantic, and Saturday Evening Post, 42 in all, expressed these interests: nonfiction, 95%; fiction, 24%; poetry, 12%; and photographs, 67%.

Of 223 "Literary and Little Magazines," publications like the Sewanee Review, Queen's Quarterly, and Fiddlehead, long devoted to the furtherance of the arts, expressed interests were as follows: nonfiction, 87%; fiction, 65%; poetry, 70%; and photographs, 32%.

Men's magazines, such as Esquire and Playboy, highly sought-after markets, 34 in all, expressed these interests: nonfiction, 100%; fiction, 76%; poetry, 3%; and photographs, 68%.

Of women's magazines, 34 were listed. These included such magazines as Woman's Day and Family Circle, giants in the magazine field, with commensurate rates to authors. Their joint monthly circulation alone is in the neighborhood of fifteen million copies. (Women find more time for magazine reading than men.) Of the women's magazines, the expressed interests were nonfiction, 91%; fiction, 53%; poetry, 18%; and photographs, 44%.

Juvenile magazines once were principally oriented toward fiction. Of 47 such publications listed, the majority favored nonfiction: 91%. Other expressed interests were fiction, 85%; poetry, 60%; and photographs, 55%.

There were listed 75 poetry magazines, dedicated to the poetic art. Their expressed interests were nonfiction, 25%; fiction, 15%; poetry, 100%; and photographs, 11%.

In summary, I tabulated the stated publishing interests of 3131 publishers, of which 84% were interested in nonfiction, 20% in fiction, 18% in poetry, and 52% in photographs.

Having found these data, my mind naturally turned to a corollary question: What are the schools of writing doing about the present situation of the market? In an attempt to find out, I sent a questionnaire to the members and affiliates of the Associated Writing Programs, or AWP, an offshoot and affiliate of the MLA, a professional organization of the more active universities and colleges in the field of creative writing. Sixty-six

institutions responded to my query. I offer their more significant answers below, only wishing that my findings were more conclusive.

A key question, item 4, was "Does your school offer formal training in writing publishable nonfiction material?" Of the schools responding, 70% said they did, while 30% responded in the negative. This response would be encouraging to me, were it not that many institutions later indicated that instruction in nonfiction was divorced from the field of creative writing and was being conducted by departments of communication, radio-television, or journalism. I am not denigrating these disciplines. I would merely be more comfortable in this knowledge if these disciplines placed more emphasis upon the advanced study of literature and linguistics than they commonly require for a degree. At FTU, for example, where creative writing is under the Department of English, a student must present 27 quarter hours in literature and linguistics above the freshman level, and at least 21 quarter hours in writing, roughly an even division. Our theory is that reading and writing are like heads and tails on a quarter. I believe that a writing student needs exposure to the best of literature to develop a personal standard for his own writing, whether he be a would-be novelist, poet, or writer of factual material.

Item 6 asked, "Can a student specialize in nonfiction writing?" Replies were discouraging. Only 22% said yes.

Item 7 would, I hoped, yield some useful information. The question was "If your school does not presently offer instruction in writing nonfiction, do you have plans to do so in the near or distant future?" Forty-three percent indicated that they had such plans. This seems hopeful.

I asked in Item 8, "In your considered opinion, should the writing of nonfiction be a serious preoccupation of creative writing programs?" Sixty-nine percent said yes; 20% said no; and 11% offered answers too ambiguous to be tabulated. However, there were some thought-provoking responses, such as the following: "Yes, except that we have found it very hard to handle, and italics mine academically hard to articulate the boundaries between creative nonfiction and journalism." Indeed, it is! In dealing with factual material, we in creative writing are late-comers. Journalism has it pretty well sewed up.

Item 10 was "Do you have a nonfiction specialist?" (You can hardly start a nonfiction program unless you have the nucleus of a faculty for the purpose.) Only 48% responded affirmatively. Looking at it optimistically, I might have said that about half of the schools said yes.

I come now to item 5, for which I had great hopes. The item read, "Please specify what courses in non-fiction you offer and total number of credit hours possible in this area. Please state whether semester or quarter

hours." Chaos, total chaos! About all I can gather from the responses is that a few schools offer fairly ambitious programs in nonfiction, and that there is a general disagreement as to what constitutes nonfiction: a number of institutions included courses in poetry, the personal essay, and playwriting as offerings in nonfiction.

Part of the problem, I think, is that we have a negative designation: nonfiction. I prefer to think of the genre as factual writing. Such writing has played a major role in swaying the thought processes of millions: think of Gibbons, of Darwin, and, in recent times, of Morrison and Rachel Carson. I am utterly opposed to the attitude that relegates factual writing to an inferior position vis-a-vis fiction and poetry.

As for photography? There seems to be a large and ready market for publishable photographs to lend visible reinforcement to the written word. Creative writing programs might do well to require or strongly recommend that their students take one or more courses in illustrative photography.

ROLAND A. BROWNE
Florida Technological University

Staffing Problems in STC Programs
Philip M. Rubens
Rensselaer Polytechnic Institute

Actually this presentation took a turn somewhere in the middle of 4c's where I ran across Tom and we started talking about CAI and computers in which I have a lot of interest right now. I've been trying to do some work with both CAI and computers. This work has caused me some intriguing problems that are not particularly common to just trying work with computers. They really cut across the entire range of interest in the tech writing program. I may not have the oldest program or the biggest program, or the best program, but I certainly have one that's farthest out on the rim of the universe. And at times, it's been a real benefit because I've had to work quite often from a point of ignorance. In trying to reinvent the wheel, I've quite often reinvented a wheel that doesn't look like anybody else's wheel. Unlike a lot of other schools, and this may not help some of you, I have virtually unlimited computer time. As a consequence I quite often use more computer time than most major corporations. It's an education process on our part; the first thing we had to do was to convince the people in engineering and in the computer center that we were really interested in using the computer. It has now gotten to the point where I do use more computing time than the College of Engineering. This inordinate time demand may be something that you may want to consider if you ever decide to get involved in the computer. The computer works fine as long as you're working with numbers; once you start working with words entirely, problems arise. Let me explain how all this ties in with staffing problems: if I want to bring someone to Michigan Tech I have to somehow show them that there are some research possibilities there. The research possibilities don't exist in the library; so, where do they exist? The computer is one place that I can show them some promise in the development of tech's processing systems, for instance. A text processing system can be developed by literally anybody with a sound computer background. By the end of a good text-handling course you should be competent enough to be able to do something like that. For our large scale grammar systems, we're in the process of hiring a psycho-linquist; grammatical analysis is his total interest. The word crunch turned the numbers crunch around. Right now we have about a half million words of documentation from texts on the computer that we have garnered from industry from all over the country. We can do anything we want with it--crunch those letters up any way we want to. We're also in the process of hiring a cognitive psychologist; you can imagine what the computer interest for that is. He also likes to cross-country ski; it helps alot. One of the main areas that I got excited about was CAI, computer assisted instruction, and the kinds of things that you can do with that; there are such sophisticated

languages now for doing CAI, that any of us can write CAI programs. I have one CAI processor in which that's all the instructor does is sit down and write it exactly as if you were writing it to hand out in class; there's no code to it at all. Codes are all taken care of. An interesting thing about being at a school like that is you can always go out and find a student to discover all the short cuts. You come across more little tiny programs which you can plug together to make big programs, and these kids play with them all day. Besides the computer, what other kinds of things are we interested in developing? Education down-the-scale moving into the high school. One local high school that I visited was like walking into a communication candy store. They literally had a program that created students for our tech communication program--completely accidental. Other kinds of media: we've talked about A.V. and where it came out on the scales in the various surveys, but t.v., radio, cassettes, all sorts of other media programs--those work particularly well for us because we're in such a remote area. We always have somebody who wants us to put a program together, whether its radio or television makes no difference. As a matter of fact, our students are involved in a very large scale project on the metric system, putting together cassette tapes on how to teach metrics in local schools. Another area that we would like to move into are new kinds of talents, and that means areas like industrial graphics. In a school like Tech or a highly technological school, like R.P.I. how do you create an art department? You don't. You create an industrial graphics department. I figured out about the second year that the way to get something approved at Tech is to go to both my board and the legislature with a proposal that had either the word science or technology in the title and it was always approved. One other thing, I guess the only problem I had with the term that we've kicked around today "retreads" is the problem of lead time and the retreading of someone. I can convince someone that I want them to teach tech writing, that I think they'll fit in to teaching tech writing or any other program, any other course within our program. But getting them back somewhere where they can learn those skills and having them still be viable by the time they get back to the classroom is really difficult. Another problem with retreading is making professional choices at that level; who do I select? Do I select the full professor doing a lot of publishing, someone beginning a new program, or a young professor who really needs the time to develop his own credentials to be able to get tenure and promotion. I have done some work with industrial co-ops and I think they may be one answer; we've tried to get someone to go down to Sundstrand this summer, a young professor who wants to begin teaching tech writing. I think that may be one way of doing it; but, once again, you have the problem of professional recognition at your university: is that work a valuable thing for some of you to be doing? I think that's about all I have to say. If you have some questions I think I could answer them now.

The one thing that I'm doing it for is to take those grammar concerns out of the classroom and to collect data on student choices, student responses to various kinds of material; the linguist and the psycholinguist who helped in this effort have certainly gained some interesting insights.

TECHNICAL WRITING AND THE TRADITIONAL ENGLISH DEPARTMENT

The University of Central Florida, formerly Florida Technological University, opened its doors in the Fall of 1968. As resident writer in the Department of English, one of my first assigned duties was to design and teach a course in Professional Report Writing, about which I then knew absolutely nothing. Apparently my first efforts were reasonably successful; before the year was out, a second professor was assigned to teach the course and technical writing was on its way to become one of the mainstays of the department. Since that first year of operation, all but two regular members of the English faculty have taught technical writing with considerable regularity, and a number of adjunct instructors have also been engaged in presenting the course.

When we first began, the course was tailored to the needs of students of secondary education, business education, and business administration. Much of my time was devoted during the first three years to conferring with deans and department heads in other disciplines. It cannot be taken for granted that a course in technical writing, however much it may be needed, will receive automatic acceptance. Ultimately, technical writing became a degree requirement in natural sciences, engineering, business administration, accounting, business education, allied health services, and certain majors in secondary education. It also came to be strongly recommended, in fulfillment of upper-division English requirements, for students in several other degree programs, including psychology, sociology, social work, pre-law, and elementary education.

By the Fall of 1972, we were catering to the needs of so many different disciplines that we offered a new, separate course in technical writing limited to students of natural science and engineering; the original course was retained as well for all other students.

We have long since given up our missionary efforts to sell technical writing; it appears now to sell itself. Presently, it is not in the interests of the Department of English to try to increase enrollments in technical writing, though we could easily do so; it is now the second most productive course we offer, exceeded only by Freshman English.

There have been some lean times, particularly at the end of the war in Viet Nam, when, without technical writing, we would have been hard out to justify retaining all of the members of our department, to the possible great detriment of our degree programs in English.

Our next step, we hope, will be to institute an English degree program in Technical Communications. The general outlines of the curriculum have been developed and only a few details remain to be resolved. Official approval, we expect, will be forthcoming, possibly by next year.

The attached tables summarize the success we have had in the field of technical writing.

Roland A. Browne

COMPARISON OF FRESHMAN ENGLISH AND
PROFESSIONAL REPORT WRITING AT
UNIVERSITY OF CENTRAL FLORIDA, ORLANDO

YEAR	FALL ENROLLMENT (HEAD COUNT)	FRESHMAN ENGLISH			PROFESSIONAL REPORT WRITING		
		NO. SECTIONS	ENROLL.	% TOTAL ENROLL.	NO. SECTIONS	ENROLL.	% TOTAL ENROLL.
1968-69	1,492	40	907	61%	12	238	16%
1969-70	3,944	53	1,382	39%	16	348	9%
1970-71	5,711	59	2,483	43%	25	494	9%
1971-72	6,596	58	1,771	27%	36	722	11%
1972-73	7,405	53	1,408	19%	33	769	11%
1973-74	7,814	44	1,254	16%	34	941	12%
1974-75	8,529	48	1,274	15%	35	1,003	12%
1975-76	10,545	57	1,455	14%	44	1,089	10%
1976-77	9,504	53	1,342	14%	45	1,206	13%
1977-78	10,605	54	1,437	14%	44	1,196	12%

TABLE I.

SUMMARY COMPARISON, TEN-YEAR PERIOD

UNIV. ENROLL.	61,540
SECTIONS FRESH. ENG.	519
SECTIONS PROF. RPT. WRT.	324
ENROLL. FRESH. ENG.	14,713
ENROLL. PROF. RPT. WRT.	8,006
MEAN % UNIV. ENROLL.:	
FRESH. ENG.	23.9%
PROF. RPT. WRT.	13.0%
MEDIAN % UNIV. ENROLL.:	
FRESH. ENG.	17.5%
PROF. RPT. WRT.	11.5%

TABLE II.

Procrustean or Paradigmatic:

A Model for Research in Written Composition

by

Stephen P. Witte

The University of Texas at Austin

When Professor Warren asked me to write for this meeting of the Council for Programs in Scientific and Technical Communication, an essay addressing research in composition, I felt honored. But when I began thinking about what might be included in such an essay, I felt certain I had been cursed, cursed not only with a topic too broad for adequate treatment in a single essay but also with an audience whose interests were quite different from my own. Even my protests--that I had not taught technical writing in seven years, that I had never developed a research interest in technical and scientific communication--fell on deaf ears, Professor Warren insisting that my audience could be counted on "to make the connections between scientific and technical writing" and whatever I might have to say about "research in composition in general." It seemed to me then, as it does now, that Professor Warren was making some rather large assumptions about my knowledge of and expertise in composition research. But I decided I could live with those assumptions as long as they were clearly identified as being his and not mine.

However, even when I denied responsibility for Professor Warren's assumptions, the prospects of attempting to address composition research I still found more than a little discomforting, because any number of approaches to the topic remained possible, even for me. Should the essay, I asked myself, focus on research design, a subject about which too many composition researchers have insufficient knowledge? Should the essay explain a number of statistical procedures useful in conducting normative and experimental research in composition? Should the essay identify a few important areas where a great deal of research is now needed? Should it take the form of a critique of selected recently published studies? Should it, in outline form, survey the major findings of recent composition research? Should the essay anticipate the direction of research in specific areas? These and many other questions I ultimately decided against answering and chose instead to address a much larger question, one focusing on the relationship between particular research and the field of written composition.

The need for such a focus seemed to me apparent because so many in our profession have been pleading of late for more and for better research

in composition, research which exceeds both quantitatively and qualitatively anything produced to date. We see such pleas in many different forms and places. They are appended to theoretical works such as D'Angelo's A Conceptual Theory of Rhetoric (1975) and to empirical studies such as those appearing in Research in the Teaching of English. Such pleas appear also as entire articles, as in the case of one of Mina Shaughnessy's last pieces (1977). We also hear such pleas during national meetings from parades of speakers including such notables as Richard Larson (1978), Maxine Hairston (1978), and E.D. Hirsch, Jr. (1978). And we do need more and better research in compostiton. But we also need to be able to understand what that research means, to understand how it relates to the field of written compostion in general, to understand which questions need yet to be asked, to understand how current research relates to that of the past.

The depth of understanding which our profession needs is, I think, presently beyond its reach, primarily because we haven't a conceptual model, a paradigm if I may use rather loosely the Thomas Kuhn (1970) term presently in vogue, capable of showing the relationships among the seemingly disparate areas of research within the field of written composition or capable of giving direction to that research. Yet the construction of such a model is possible, and in the remainder of this essay I will develop, in a very general way, a tentative conceptual model of the kind I think our profession needs.

In the opening paragraph of the "Introduction" to their provocative anthology titled Research on Composing: Points of Departure (1978), Cooper and Odell offer a brief and pointed evaluation of the history of research in written composition:

What we have needed for decades and what we must have soon is a period of vigorous research on written discourse and the composing process. For too long a time, many researchers assumed that the most important kind of inquiry was pedagogical research, that the most significant kind of question was: What materials and procedures will improve students' work in written composition? Underlying this question was a further assumption--that we did, in fact, have an adequate understanding of the term composition, that our primary job was determining the effectiveness of specific instructional materials and procedures, rather than finding out exactly what information and skills teachers and researchers ought to be concerned with.

These remarks are, in one sense, accurate. They imply that the term composition should not be defined exclusively with reference to instructional practice; they suggest that composition research should explore new and perhaps uncharted areas; and they condemn outright what has been historically a decided and overwhelming pedagogical thrust in far too much

of the research in written composition. But in another sense, the remarks are misleading, because they fail to call attention to the great amount of significant research completed in recent years.

There have, in fact, been numerous remarkable advances in composition research--through theoretical studies, through empirical investigations, and through pedagogical studies--on several fronts. Since the appearance of the Braddock, Lloyd-Jones, and Schoer (1963) study, we have seen, for example, the publication, in the area of discourse theory, of Moffett's Teaching the Universe of Discourse (1968), Kinneavy's A Theory of Discourse (1971), D'Angelo's A Conceptual Theory of Rhetoric (1975), and the work of James Britton (1975, 1978) and his colleagues at the University of London Institute of Education. Significant research has also been completed on syntax in written discourse, as evidenced, for example, in the published studies of Loban (1963, 1976), Hunt (1965, 1970, 1977), O'Donnell, Griffin, and Norris (1967), and Stewart (1978). No less important are the studies which have given us ways of understanding better certain aspects of the composing process. Relevant here is the work of such notables as Young, Becker, and Pike (1970) on tagmemic invention, Lauer (1967, 1970) on heuristics, Winterowd (1973, 1975) on the use of Burke's (1945) pentad in invention, Christensen (1967) on generative rhetoric, Emig (1971) on the composing of young adults, Berthoff (1971) on problem-solving, and Rohman (1965) on prewriting, to name but just a few.

In citing selected recent works on discourse theory, on syntax in written discourse, and on the composing process, I am not suggesting that those are the only areas in which composition research has advanced noticeably or significantly in recent years, nor am I suggesting that my catalogue of works within those areas is exhaustive. To suggest either would be to contradict the overwhelming testimony of Tate's Teaching Composition: Ten Bibliographical Essays (1976), of Larson's and Dieterich's annual bibliographies appearing, respectively, in College Composition and Communication and Research in the Teaching of English, and of other excellent bibliographies. What I am suggesting is that we have, in fact, been witnessing "a period of vigorous research on written composition and the composing process," a period of the kind Cooper and Odell contend "we must have soon."

If what I am suggesting is true, why then do Cooper and Odell maintain that we haven't had, but certainly need, such a period of research? One possible answer is that while in recent years research activity has reached new levels, it has perhaps raised more questions than it has answered, thus suggesting that the more we learn about composition, the more we have need of knowing. That is to say, much research in written composition has of late functioned as a kind of open-ended heuristic device, pointing contemporary researchers and teachers in directions previously unknown, generating important questions that a few short

years ago could not even have been asked, much less answered. Other possible answers might be found if we choose to view the quantity and quality of recent composition research as the marks of a discipline seeking to redefine itself--a discipline, as Maxine Hairston (1978) has urged, in search of a new paradigm, or, to place the matter in the context of the Cooper and Odell quotation, a discipline seeking "an adequate understanding of the term composition." If the discipline is in the process of redefining itself, recent research probably appears almost random, haphazard, directionless, its own vigor distracting from its ultimate value.

Whatever the source or sources for an answer to the question I raised about Cooper and Odell's assessment of composition research, one thing seems clear: what we do not now have and what we desperately need is a framework for conducting research in written composition. Such a framework or conceptual model must, I think, meet a number of specific criteria. First, it must accommodate the entire field of written composition and, at the same time, indicate the boundaries of that field. Second, it must be useful as a tool for classifying empirical research in written composition, research already completed and research yet to be completed. Third, it must provide a basis for testing or validating theories which attempt to explain all or part of the field of written composition. Fourth, it must be useful as a heuristic device for generating basic research questions, which is what I am primarily concerned with here.

To develop a model which meets these criteria, it is necessary, first, to divide the field of written composition into its principal components. These components are four in number, two of which are perhaps more readily apparent than the others. The first of the obvious components is that which addresses the composing process, the production of written texts. The second is that which addresses itself not to the composing process but rather to descriptions and analyses of the artifact produced, the written product. These two components are probably readily apparent to anyone familiar with research in the field; and probably few would argue that these two components cannot be separated for analytic or theoretic purposes, even though ultimately the two are related because the written text results from the composing process. The third and fourth components are less obvious than the first two and require some explanation.

The first of these two remaining components is that which deals specifically with the decoding of written texts. Although this component is concerned with the readability of written texts, mere readability is not its sole concern because decoding a given written text involves much more than simply processing its verbal, discursive meaning. De-

coding written texts must also include among its concerns deciphering the writer's attitude toward his subject matter, assessing his treatment of the subject matter, processing such things as tone, making judgements of overall writing quality--all of which are matters that people in our discipline have themselves been concerned with for many years. What I have called the decoding of written texts is, of course, related to both the production of texts and the texts themselves, but how and with what success a reader or audience can process a text remains in one sense distinct from the processes which led to its production and from whatever describable characteristics a given text may be said to have. If this distinction between the decoding of written texts, on the one hand, and the composing process and the text itself, on the other hand, were not a valid distinction, then we could reasonably assume that any given reader could process accurately and sensitively any given text. Those of us who have taught composition and those of us who are decoders of texts ourselves, however, know that such an assumption has little basis in reality.

If decoding the written text may seem to some to have little justification as a component of the field of written composition, the fourth component, pedagogy, may appear at first glance to have even less justification because what we do in the composition classroom often has its source in what we think we know about the composing process, about written texts, and about decoding written texts. But pedagogy can be defended as one of the four components of the field of written composition. First, it can be defended because most of us, perhaps all of us, who are interested in the field of written composition have a vested interest in teaching others to become better writers, a circumstance which is primarily responsible for the plethora of pedagogical research lamented by Cooper and Odell. Second, and more important, it can be defended on the grounds that pedagogy often develops independently of a particular discipline. That is to say, many pedagogical developments are not discipline peculiar, having applicability across a wide range of different academic disciplines. One example will help illustrate the point I'm trying to make here. Consider the relatively recent development of computer-aided instruction. As a pedagogical tool, regardless of the discipline in which it was first used, computer-aided instruction has been applied successfully in the teaching of chemistry, physics, mathematics, grammar, and history; but it is also being used by Hugh Burns at the University of Texas to teach students, engaged in the composing process on the computer, invention strategies, to use Aristotle's "topics," Burke's pentad, and the tagmemic matrix of Young, Becker, and Pike. In short, developments in pedagogy are not necessarily or exclusively derived from the other three components of the field of written composition. Rather, pedagogical research aims principally at complementing developments in the composing process, the analysis

of written texts, and the decoding of written texts. That pedagogical research may not have succeeded historically in achieving this goal, as Cooper and Odell suggest, is no good reason to dismiss it as one of the principal components of the field of written composition.

Ideally, the four components of the field of written composition--the composing of written texts, the description or analysis of written texts, the decoding of written texts, and the pedagogy of written composition--should all relate to one another in such a way that a significant advance or development in one area of research has the potential to affect any or all of the other areas. If such complementary relationships can exist among the four components of the field of written composition, it then becomes necessary to explain in some detail how those relationships function. That explanation must focus on two matters: (1) the shared concerns of each of the four components of the field of written composition and (2) the categories of questions which can be asked and answered, from the four different points of view, about the shared concerns.

First, the shared concerns. Whether we are primarily interested in the composing process, in the analysis or description of written texts, in the decoding of written texts, or in the pedagogy of written composition, we are ultimately concerned with five features which either are embedded in written discourse or must be taken into account in order to produce effective written discourse. These five features or shared concerns are the writer, the audience, the purpose(s), the subject matter(s), and the discourse mode(s). I have isolated these features because with them it is possible to distinguish not only between different kinds of prose discourse but also between individual pieces of discourse of a particular kind. I have also isolated these features because I cannot conceive of a written tect which either does not have or accommodate them. It should also be pointed out that while composition research might usefully focus on any one or any combination of the five features, in actuality they relate to one another configurally, so that as one is affected so, too, must the others be affected in some way. Thus, if in composing a piece of written discourse I decide after writing a paragraph or two that, say, my purpose is not appropriate to the subject matter or the needs of the audience, I cannot appreciably change the purpose without affecting in some way my relationship, as writer, to the other four features.

This configural interaction among the five features I have tried to illustrate in Figure 1 which shows a pentangle whose sides are formed by the five features I have isolated. Within the pentangle a five-point star appears, its points having been formed where any two sides of the pentangle intersect. This star, it will be observed, consists of an internal pentangle and a series of five triangles, whose sides, together with the five sides of the outer pentangle, form another five triangles.

Figures

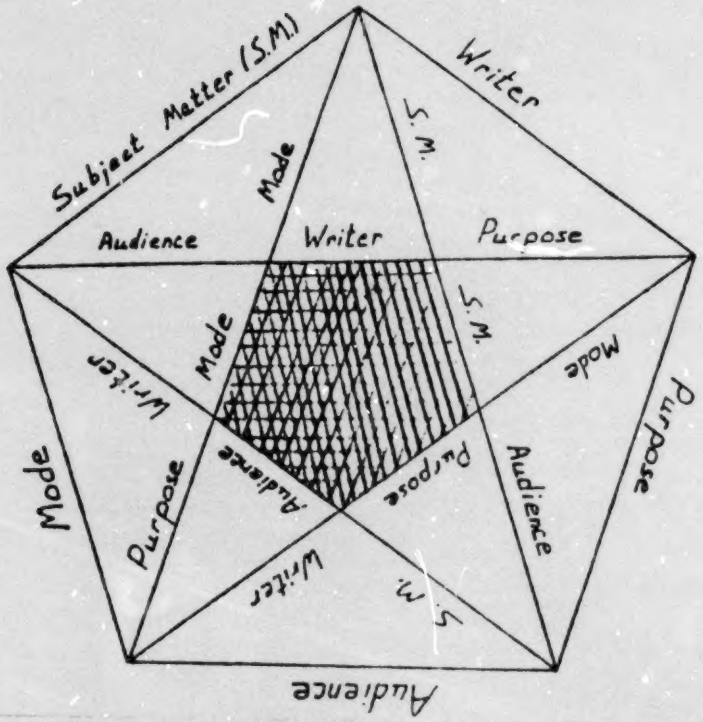

Figure 1. A Pentangle Showing the Configural Interactions Among the Five Shared Concerns of the Four Components of the Field of Written Composition.

These ten triangles can be used to represent all the possible combinations of the five features as they contribute to the production of written discourse, the characteristics of the written discourse product, the decoding of the written text, and the teaching of written composition. These four components of the field of written composition are, in turn, all represented by the single, shaded pentangle at the center of the star.

Not only do the four components of the field of written composition share an interest in audience. purpose, writer, mode, and subject matter, but they also attend to the same four kinds of questions or issues. These four kinds of questions or issues may be seen as focusing on or involving either psychological and/or cognitive processes or structures, lexical or semantic features or decisions, syntactic features or deci-

sions, or rhetorical features or decisions. As with the division of the field of written composition into four complementary components and with the isolation of the five shared concerns of the four components of the field, objections may be raised against these categories of questions and issues on the grounds that, for example, lexical or semantic, syntactic, and rhetorical decisions are never totally separable from the mental operations of the writer, on the grounds that rhetorical decisions frequently affect semantic and syntactic choices, on the grounds that semantic decisions may affect rhetorical and syntactic choices. However, what such objections point to is a very important principle, namely, that the field of written composition must ultimately consider the configural interaction of such issues in the composing process, in the text produced, in the decoding process, and in the teaching of composition. Nevertheless, it should also be noted that just as psycholinguistics, linguistics, semantics, and pragmatics have come to exist almost as autonomous disciplines in spite of the obvious relationships among them, so, too, is it possible for research purposes to identify categories into which can be placed questions raised about the composing process, the written text, the decoding process, and the teaching of composition. For purposes of expediency and brevity, I will not now offer any further justification for the categories of questions or issues I have suggested, nor will I indicate the dimensions of the categories beyond what is suggested by the names I have assigned to them. Hopefully, additional objections beyond those I raised above will be answered shortly.

Thus far I have argued that the field of written composition can be divided into four major components. I have also argued that for these four components of the field there exists a kind of common denominator consisting of the shared concerns. And I have suggested that four kinds of questions can be asked and answered, from four different perspectives, about these five shared concerns.

These three matters--the four components of the field of written composition, the five shared concerns, and the four categories of questions or issues--constitute what might be called the structure of the field of written composition. But they also provide the basis for a conceptual model useful for classifying research in written composition and the basis for a kind of heuristic useful for generating basic research questions. If represented graphically, rather than verbally as I have attempted to do thus far, this model, however it might be used, would probably look something like the segmented box pictured in Figure 2. The four sides of the box represent, respectively, the four components of the field of written composition, labeled "writing discourse," "written discourse," "pedagogy of written discourse," and "decoding written discourse." The four sides are, in turn, divided, first, into five

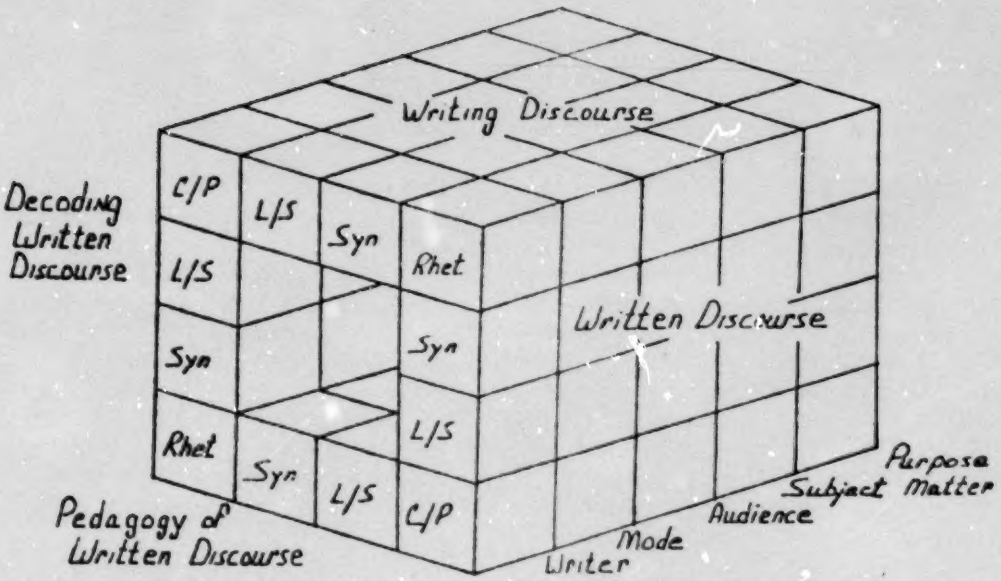

Figure 2. A Conceptual Model for Classifying and Generating Research in the Field of Written Composition.

elongated sections each. These five elongated sections represent respectively the five shared concerns--the writer, the discourse mode, the audience, the subject matter, and the purpose--of the four components of the field of written composition. Ideally, of course, these five shared concerns should be seen both as interacting one with the others and as distinguishable one from the others. The two ends of the box-diagram are segmented according to the categories of questions or issues which can be raised about the shared concerns from the different perspectives of the four components of the field. These segments are labeled "C/P" to indicate the cognitive and/or psychological issues or questions, "L/S" to indicate the lexical or semantic, "Syn" to indicate the syntactic, and "Rhet" to indicate the rhetorical. The lines dividing the two ends of the diagram into the categories of questions or issues are extended around the entire box, thus indicating for each component of the field of written composition that four kinds of questions can be asked or issues raised about each of the five shared concerns.

Given the conceptual model of the field of written composition depicted in Figure 1, it is now nearly possible to show how any of the four sides can be used as a matrix for generating questions in composition research, a matrix such as the one represented in Figure 3. First, however, some

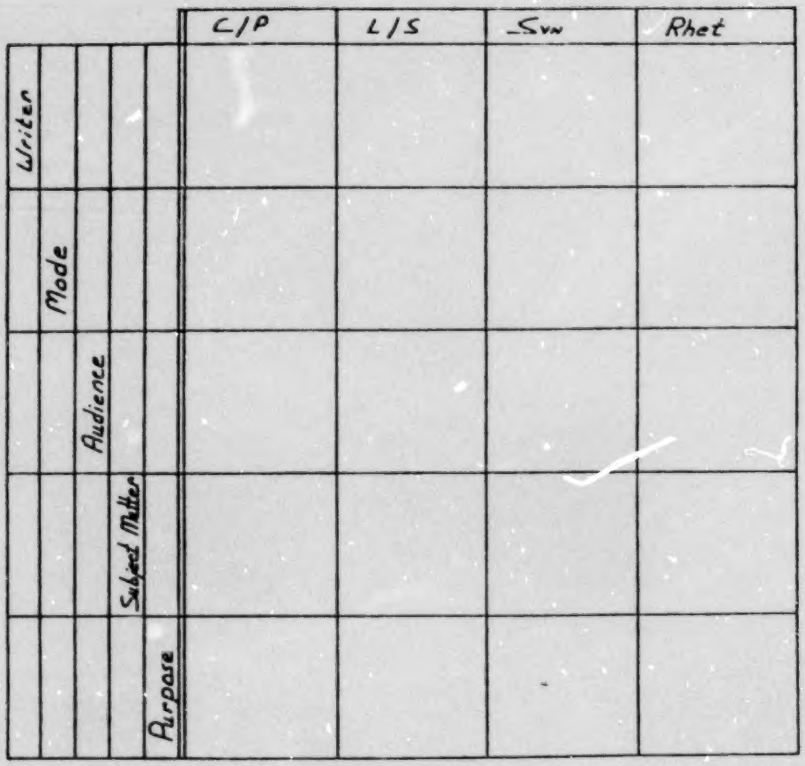

Figure 3. A Matrix, Based on the Conceptual Model of the Field of Written Composition, for Generating Research Questions.

of the peculiarities of the four matrices must be noted. It is necessary, for example, to stress at the outset that the usefulness of the four matrices is to some extent contingent on both the imagination and the knowledge of the potential researcher, the respective matrices suggesting only categories of questions that can and should be asked, not specific questions. However, in specifying categories of questions, any one matrix offers directions for research by giving researchers different ways of viewing a given research area. In this regard, the four possible matrices function no differently than, say, the Young, Becker, and Pike (1970) tagmemic matrix which does not supply specific content but rather suggests various ways of viewing "a unit of experience" for the purpose of generating or identifying specific content. It is equally important to stress that for any of the 20 cells forming a particular matrix, the questions which can be generated are probably finite in

number but may seem infinite at this point in the history of composition research. It should also be noted that generating a particular question does not insure its importance any more than generating a particular matter of content through the tagmemic matrix insures the inclusion of that matter in the writer's finished product. Reasoned selectivity must in both cases prevail. The importance of such selectivity becomes apparent when we recall that the five shared features of the four components of the field of written composition can be treated singly, in any combination, or configurally, this latter representing the way in which they probably interact within written texts and within the process of producing written texts. To accommodate the possible isolation of a given shared feature and the possible combinations of them, I have staggered the five shared features along the vertical axis of Figure 3. Thus by shifting along the axis of the matrix the positions of one or more of the five shared features, it becomes possible to generate, if my calculations are correct, a total of 64 kinds of questions for any one of the four components of the field of written composition, or 256 kinds of questions for the field of written composition. Because a large number of questions of a particular kind could conceivably be generated, the necessity of careful selection is apparent. Quite clearly not all of the possible questions will be of equal importance. However, 16 kinds of questions seem to me more important than the other 240 kinds; and these 16 kinds of questions are those formed when the five shared features are viewed configurally from the four perspectives of the field of written composition in terms of the original set of four questions--cognitive/psychological, lexical/semantic, syntactic, and rhetorical. Answers to all other possible kinds of questions should, ideally, help formulate the answers to these 16 kinds of questions.

Given these prefatory remarks on the use of the matrix pictured as Figure 3 and given my own limited knowledge and imagination, I shall now try to show how the conceptual model I have posited can be used to generate research questions. For purposes of this brief illustration, I assume two different situations, each corresponding to a different component of the field of written composition. For simplicity's sake, I further assume that each situation involves either a single text or the production of a single text. Finally, for brevity's sake, I assume that all the questions generated should fall into the four most important classes of questions and that one question in each of the four classes will provide an adequate, if limited, illustration of the kinds of questions which can be generated for any of the four cells in the matrix.

From the standpoint of the composing process or the production of a single written text and the configural interaction of the five shared features, the following questions seem to me representative of significant ones. Moving across the horizontal axis of the matrix, we might ask

whether field dependence as a cognitive trait of the individual writer has any impact on his ability to write discourse, having a given purpose and written in a given mode, about a particular subject matter for a given audience. If we decide to ask a lexical/semantic question, we might inquire whether or not the writer's vocabulary is suitable to his subject matter and his audience when he writes for this purpose in this mode. We might also wish to ask a syntactic question such as the following: what unusual syntactic demands does the purpose of the text being produced make on the writer writing about this subject matter in this particular mode for this specific audience? Finally, we could ask a series of rhetorical questions such as those which focus on the writer's ability to write coherent paragraphs, written in this discourse mode and having this purpose, about this subject matter for this audience.

If we shift the focus of our attention to the actual text produced, we will generate questions of a different kind. Again moving from left to right across the horizontal axis, we can ask, first, cognitive/pyschological questions. Among these might be the following one: to what extent does this paragraph having this purpose and written in this discourse mode about this subject matter for this audience employ syllogistic reasoning effectively? Or we might wish to ask, given the other four features, whether the semantic relationships among the various parts of the text are clear. We might also ask which types of sentence embeddings predominate in textual units written primarily in one given discourse mode. And we might also decide in answer to another question to catalogue those rhetorical devices which contribute to the rhythm of the piece.

With the use of the matrix, we could, of course, generate such questions indefinately, focusing not only on the composing process and the written text but also on the decoding process and the teaching process. But for the purposes of the present essay, the generative aspect of the model is sufficiently well illustrated, that aspect being limited only by the knowledge and creative imagination which the researcher brings to it.

This generative aspect of the conceptual model of the field of written composition meets, however, only one of the four criteria I listed for such a model. Although it is not my primary purpose to show how the conceptual model I have posited meets the other three criteria I listed, I would like to re-emphasize those salient features of the model which appear to me at least to address those criteria. First, if the conceptual model I have posited is useful for generating the full range of research questions, it must then also be useful for classifying research already completed. Whether it meets the criterion calling for a generative model or the criterion calling for a

classificatory model cannot, of course, be demonstrated conclusively. I can, however, say that quite a large number of graduate students and upper-division undergraduate students at the University of Texas and several of my colleagues at Texas and at other universities have found the model useful both for generating research questions and for classifying research in particular areas of written compositions. Second, if the conceptual model is a sound one, then it must provide a mechanism for showing the relationships among or the inter-relatedness of the four components of the field of written composition. This mechanism exists, I think, within the model itself, manifesting itself in the four matrices each of which from a different perspective views the five shared concerns in terms of the four categories of questions I have specified. However, that mechanism is clearly predicated on a number of assumptions: (1) that the four components of the field of written composition are the components; (2) that the five shared features or concerns are the features or concerns; (3) that the categories of questions are inclusive; and (4) that the categories of questions, as well as the shared features or concerns, are relevant to all four components of the field of written composition. To me, these assumptions are reasonable ones; to others, however, they may not be. Finally, if my conceptual model of the field of written composition is a viable one, then it should lend itself to use in testing and validating theories attempting to explain all or part of the field of written composition. Pending the acceptance of the assumptions underlying the model, it is impossible to determine whether or not the model meets this last criterion. However, if the underlying assumptions are acceptable, then a given theory can at the very least be superimposed on the segmented box pictured in Figure 2 in order to determine what the theory is capable of explaining and what it is not capable of explaining.

The usefulness of the conceptual model I have outlined in a very general way in this essay for composition research will ultimately determine whether I have created a Procrustean bed or identified a paradigm or formulated a model having some paradigmatic implications. If the conceptual model proves useful, then running the risk of creating a Procrustean bed will have been worth it. If the model does not prove useful, I should like to think the risk will still have been worth it. In any case, I am certain to find either comfort or humility in Kenneth Burke's reminder that "A way of seeing is also a way of not seeing."

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PUBLICIZING YOUR TECHNICAL WRITING PROGRAM, ON- AND OFF CAMPUS

--Martha Eckman
Assoc. Professor of English
Bowling Green State University

Some years ago, an inmate of one of the Southwest's penitentiaries was asked what he planned to do after he'd served his sentence. He was completely unskilled in anything except safecracking. "Well," he replied, "I reckon I'll just have to serve as a horrible example."

Some years ago, I thought all I wanted was to develop a good course in technical writing. Eventually, it became obvious that what I really wanted was to develop a good program in technical writing. Since I've served my sentence and Bowling Green State University now has an M. A. program in technical writing, perhaps my mistakes will be helpful to you as a horrible example. Ohio hasn't put me in the penitentiary yet, but I keep a watchful eye on the local police anyway.

Mentioning the police brings me to my thesis: to publicize your program in technical writing, you must take advantage of every opportunity personally to publicize your program and your own skills as a technical writing teacher.

Recently our Director of Campus Safety (we used to call him our police chief) asked if our technical writing staff could develop a report-writing clinic for campus police. Certainly we could! We didn't know what we were getting into, but we jumped in feet first: accepted the invitation and developed a top-notch workshop. You might be interested to know that there is a small but excellent library of technical writing texts specifically for police, on how to write narrative reports of investigations.

So many ways exist to publicize your technical writing program that the best way to present them, I believe, would be in a list. These are the ways we have publicized our program at Bowling Green. Maybe they will be helpful on your campus, too:

Initiate an internship program for your students with full- or part-time registration, depending on the hours worked. In the course of finding sponsors for your students, you'll publicize the writing program off-campus.

Improve your own editing skills. Spend a summer or a quarter/semester in an industry near your university. You will learn to work with style manuals other than that of the M.L.A., and you will publicize your program simply in the process of meeting and working with people off-campus.

Accept invitations to develop technical writing workshops for local industry. While you help engineers learn to write good trip reports, you will be asked to publicize your program off-campus. Frequently, some of those workshop students will enroll in your night classes.

Apply for research grants, faculty improvement leaves, or whatever is available on your campus. Write up your research in technical writing and report to the academic bodies who sponsored your research.

Get out of your office. Call and visit the chemists, biologists, industrial technologists, physicists, geologists, and computer science faculties of your own campus. All of them have equipment which needs clear operating instructions. Ask for the opportunity to assign your students to these other departments, especially to write operating manuals for campus equipment.

Visit your own publications office, your Library and Instructional Media laboratories, and learn what facilities your campus has for preparing professional-quality reports. Locate the nearest typesetting service, a dry mount press, and the industrial illustration laboratory.

Find our if your campus has Xerox 9200 and 6500 equipment. What about pad-binding in the Library for student reports? You probably have access to a spiral binding machine. Certainly your bookstore will handle dry transfer lettering sheets.

THEN, assign your students the tasks of writing good operating manuals for equipment in other departments on-campus. Make sure the reports are attractive, spiral-bound, and prepared in multiple copies.

Enter your students' reports in publication contests. I say this with some trepidation, but with a measure of confidence that the students won't let you down. Their interest in professional technical writing and their attendance at local STC chapter meetings will publicize your program--both on- and off-campus.

How to do it. First, let's realize that you cannot publicize a technical writing program until you have an official program to publicize. Until it is official, however, the program can be publicized as "developing." What about publicity and brochures? You don't have time to write the brochures yourself, but you can assign seniors or graduate students to write them. Make sure you assign such a project to a student who has no experience with layout, dummies, or paste-ups. The entire project will be excellent experience for the student. You will have the paste-ups in your file cabinet, ready to send to a printer the minute your program is actually approved.

Second, don't try to do it alone. Use all the help you can get from your local STC chapter members and from faculty members outside the

English Department where you teach. I'm assuming that most of you teach in English departments. That's a dangerous assumption, of course. Our graduate dean had us climbing the walls two quarters ago, trying to prove that the "generic home" for a technical writing program was in the English Department. We told him that the journalism folks didn't want the course or the program. We told him that all our national professional societies have sessions on technical writing, how to teach it, what it is and all that. Still, he wanted written evidence from other universities that the "generic home" was English. It is very difficult at times to deal with traditional academicians.

Third, cultivate your own garden. When a fellow from the Bell System suggested to me that I give writing assignments right on my own campus, I thought he was maybe a bit off his rocker. How could an academic setting provide bonafide technical writing experience? My mistake was in not following the suggestion sooner. You can give your students legitimate technical writing assignments and, at the same time, publicize your technical writing program on-campus. Let me give you a few examples:

Our biology department purchased an electron scanning microscope from Hitachi in Japan. Unfortunately, the original operating instructions were written in Japanese. In the process of translation, some of the instructions were incorrect, and our biology department did not dare let students use the machine for fear it would be damaged. One of our technical writing students worked with the microbiologist on campus and developed an excellent set of operating instructions for the Hitachi-7.

Our seismograph laboratory is excellent but no instructions were available for using any of its equipment. The lab instructor himself took the technical writing course and developed a set of office and lab procedures.

Likewise, the geology department purchased a new polaroid camera for classes in macrophotography. Just last quarter, one of the technical writing students developed a set of operating instructions for the camera.

Four experiments could be directed in the automotive technology laboratories on campus, but no instructions for the experiments had been written for beginning automotive tech students. One of our English graduate students accepted the challenge, researched the four different kinds of generators involved, and wrote a technical lab manual for the professors.

Numerous pieces of equipment in our Industrial Education and Technology laboratory needed instructions for beginning students. Quarter after quarter, and year after year, our technical writing students have trudged over to the I.E.T. Building and have produced manuals for plastic molding machines, metal and wood lathes, one- and two-cylinder engines, and both vertical and horizontal process cameras.

Every well-written operating manual your students produce for a professor or department is publicizing your technical writing program on-campus.

Enough. Someday, I hope that you will give me an opportunity to prepare an annotated bibliography of the projects our technical writing students have produced. Presumably, you are keeping copies of all your students' projects and will develop you own bibliography. We insist that our technical writing students produce their reports in multiple copies: (1) for the outside department of business they are working with, (2) for their own portfolios, and (3) for the technical writing program library. Ultimately, when you have collected a splendid group of student reports, you have tangible evidence of your program. It is so rewarding, when someone asks what your classes are producing, to be able to whip out a stack of professionally-prepared student reports and say, "Here! They did this...and this...and this..."

Finally, your students are your best publicity. Armed with the skills you teach them, your students will be out there working for the big corporations. The work they do will be "top chop." When somebody asks, "Where did you learn all that stuff?" They will sing the praises of X-Y-Z University, and that's good publicity off-campus any day of the week. I don't know how harmonious all those students will be, but they will make a joyful noise.

TECHNICAL WRITING PROJECTS, SPRING 1979

Baker, Susan 271-64-8537
Sales/marketing PR brochure for Student Recreation Center, under direction of John Ketzer

Bright, Cindy 269-56-4568
PR brochure for Reist's Seed Company - Mount Joy, PA under direction of Henry Reist and/or Dave Reist, Accounting Department.

Burger, Dave 277-64-2374
Calibration manual for horizontal process camera, under direction of Barry Piersol. (Has user's manual for horizontal process camera.)

Bishop, Carol Dishong 297-56-9870
Job safety analysis (as many machines as time will permit) for Metal Forge Co., Inc. - Deshler, OH under direction of plant safety director. Reference: Basic Safety Manual for Ohio Industry., publ. by Div. of Safety & Hygiene, Industrial Commission of Ohio.

Burt, Becky 296-58-1801
Operating manual for Audio Study-Mate, under direction of Jerry Hartwell, AV in Industrial Educ.

Berger, Ed 279-60-8017
Script for one (1) TIE package (technical & industrial education) under direction of Dr. Ted Sipes. Bill Schabel (IET) will furnish slides.

Bliss, Shelley 295-56-2710
Pamphlet describing Health & Community Service internships program for Medical Records Administration, under direction Dr. Ed Morgan (Dean, HCS)

Caldwell, Susan 017-40-4118
Office procedures manual for Office of Personnel Administration, Campus. Has Dartnell text.

Cerniv, Tammi 270-64-1595
Market Survey with Wilcox Independent Studies questionnaire, under direction of Dr. Richey (BAC).

Cassetta, Dom 050-52-2233
Revised section on photography in seismic laboratory manual for Geology Department, under direction of Bill Butcher (geology dept. technician).

Davidson, Judity 283-40-4193
Two (2) of five TIE package scripts under direction of Dr. Ted Sipes. Has STC metrics publication.

de John, Carla 269-44-6911
Operating manual for Eiki 16 mm projector, under direction of Jerry Hartwell (AV-IET).

Droll, Jerry 281-50-4744
Pr brochure/poster for Physics Department under direction of Ron Stoner.

Dahs, Susan 270-52-3496
Development/feasibility study for BGSU College of Health & Community Services purchase of Medical Records Laboratory Equipment, under direction of Dr. Ed Morgan.

Calderozzo, John 079-40-8127
Introduction to the EPIC system, a synchronized filmstrip/recording under the direction of Tony Palumbo. To cover entire EPIC package (total SIM units to be marketed internationally. Has 7 individual EPIC manuals).

Donovan, Dolores 192-26-5031
IET student manual entitled, "How to Write An Algorithym," under direction of Carol Fey. And technical editing revision of FIELD MANUAL FOR GEOGRAPHY STUDENTS, under direction of Dr. Tom Anderson.

Ecker, Pam 291-42-3119
Proposal and revised operating manual for Ohio Association of Student Councils. Will be presented to 1979 summer workshop staff members.

Guelushi, Bashir 289-68-4190
Analysis of annual financial statements/report of Marathon Oil Company (one of three parent companies of Oasis Oil Co. in Libya), under direction of Dr. Tim Ross (Accounting Dept., BGSU) and Mr. Bob Brown (Operations Accounting Manager, Marathon).

Gray, Vicki 268-60-4287
Operator's manual for thermofax machine in I.E.T. Audio-Visual Equipment Laboratory, under direction of Jerry Hartwell.

Graber, Stuart 130-46-0192
Manual for preparation of core samples in geology laboratory, under direction of Bill Butcher (lab technician).

Hansen, Terry 326-38-5971
PR/marketing brochure for possible technical report-writing seminars during 1979-80, under direction of Dr. Russell Brock, BGSU Management Center. Also will develop mailing list from STC directory.

Haynes, Jan 280-62-0857
Annotated bibliography of English 488/573 (technical writing) projects for previous four years, under direction of Martha Eckman (for English Dept. Library).

Heck, Judith 379-56-0432
Storyboarding and script for AV training package for 400-Printway, manufactured by Toledo Scales, Inc., under direction of John Gercon, Employee Training.

Krygier, Jerry 285-52-2872
Pamphlet explaining to the layman (college professor) the process by which the Governor/Board of Regents makes decisions from an "Expenditure Model," under direction of Dick Edwards, Asst. to the President. Multiple-copy production.

Klein, Mary Ann 378-64-2761
LCD-13 (learning concept discovery) on Gearing and Speeds, for undergraduate automotive technology students, under direction of Tony Palumbo.

Lynch, Beverly 297-50-4522
Preparation of flipbook for IET lower-division students, "How to Write a Term Paper at BG," under direction of Carol Fey.

Mezardjian, Mimi 299-58-6479
Two recent developments in cassette recording: iron tapes and digital recordings. Will be used concurrently for IET 152, under direction of Carol Fey.

Meuser, Tony 274-50-4097
Four-part wholesale brochure w/perforated reply card for Electric T-Shirt Factory, Inc., under direction of Rick Kramer. And promotion letter to hospitals for baby T-shirts.

Niederman, Robert 277-56-6597
Video tape of interview techniques for University Placement Services, under direction of Lehman & Galloway, Director UPS. Filming & editing to be handled by Channel 57 TV. Has loan copy of The Making of a Video Tape, by Diane Holme.

Obernesser, Pat 086-52-8303
Critical analysis of three articles in endocrinology under direction of Dr. Meserve, Biological Sciences.

Ostanski, Gary 077-48-7185
Welding activities manual for IET 361 students, under direction of Dr. Robert W. Innis, IET.

Petersen, Candy 296-44-9833
A feasibility study in effects of phosphatidylcholine (PC) and lysophatidylcholine (LPC) on the viscosity and elasticity of mucus in cysticfibrosis (CS) in children. Has copy of STC-74-76, How to Write the Technical Article and Get it Published.

Perl, Diane 293-56-9389
Proposal for Renewal Project for the Slavic Village Association (Cleveland) to the Urban Reinvestment Task Force.

Pelking, Scott 585-22-0014
Instruction manual for synthesizer module set (mike/line input unit, multifunction filter, reverb unit, ring modulator, VCO, and output mixer) to be used in STUDIO "B" of new Performing Arts Building, under direction of Dr. Burton Beerman.

Prenslow, Christi 269-56-3621
Operating manual for Athena (computer-programmed) model Singer sewing machine: prototype manual for Ohio Singer office mangers & other personnel, under direction of Jeff Leonhardt, Manager - Singer at Chapel Hill (Akron), Ohio.

Stanonik, Dave 278-38-6044
Revised manual: IBM 3800 Sub-Systems Programmer's Guide for OS/VS2SVS + selected information from other pamphlets - to be used by programmers and systems analysts at Marathon Oil Company. Languages involved: PL/1, Fortran, and Cobol.

Silcox, Hugh 217-48-6440
Industrial mathematics workbook for IET 152, under direction of Dr. Robert W. Innis (will involve additional technical editing, also).

Spratt, Bill 259-82-8747
PR borchure and dealer info. pages for dial timers mfg. by ARO Corporation (Bryan, Ohio), including self-mailer format for brochure.

Shirilla, Tom 290-64-2515
Script/slide presentation on Opportunities in Bio-Medical photography. Will develop one-paragraph description of project (tentative proposal) for approval by Dr. Gene Poor & M. Eckman. Final copy w/consist of bound copy of script w/color-copy slides.

Thornhill, Larry 356-52-9566
LCD #___ Transformers User's Manual, under direction of Tony Palumbo (automotive technology). Has 1977 edition of Performance Dynamics, The Job Search.

Tolt, Amy 271-60=6609
Brochure describing B.A.C. program internships for recruiting, under direction of Dr. Rickey.

Ulreich, Fred 337-54-6223
Office Procedures Manual for Office of Alumni Affairs (10 copies), under direction of April Hill-Harris.

Weber, Marianne 296-48-9480
PR brochure for Wever Realty in Hamilton, Ohio.

Walsh, Ellen 080-46-7368
Poster/Brochure for cooperative education assignments program and two 2-fold brochures w/perforated reply cards, for Office of Cooperative Education - BGSU.

Wessell, Sally 274-64-0505
Two (2) scripts for two of five T.I.E. packets, under direction of Ted Sipes, I.E.T. Will work in close cooperation w/Judith Davidson.

Yingling, Tammy 295-56-4989
Medical Filing System Procedures for Medical Records Laboratory, under direction of Dr. Ed Morgan.

Brown, Joe 270-46-6280
Revise selected portions of EPIC Engine Analysis System, under direction of Tony Palumbo.

Edmondson, Stuart 292-56-5928
Prototype owner's manual for Citicar (electric), manufactured by General Engines, Inc. (Sebring, Florida). Also letter of inquiry for publication.

Martin, Scott 295-52-8173
PR poster/brochure (or both) for RESIDENCE LIFE, under direction of Fayette Paulson.

Peckins, Eric 107-50-4091
Operator's manual for micro computer in Computer Science Department, under direction of Mr. Ahluwalia.

Shorter, Jim 299-58-7408
Operator's manual for amplifier and 16mm arc-lamp projector, for Instructional Media Center, under direction of Sally Norton (Math-Science Library).

Verble, Terrie 302-56-6413
PR brochure for Sundown Motel (Sandusky, Ohio) to be sent to convention centers, Chamber of Commerce, etc., under direction of Donald J. Verble.

John Brockmann spoke briefly at the meeting describing his research on how academic programs integrate with the commercial endeavors of business and industry.

He specifically discussed his analysis of internship programs, and he asked for the conference's participants help in their research. The final results and conclusions of his research via a mail survey to all programs in the CPTSC are fully reported in the 1980 proceedings.

FACULTY AND MARKETING LIBERAL ARTS GRADUATES

Just about everyone would agree that one goal of higher education is to help students develop their ability to think critically and analytically. Debate amongst faculty members will ensue, however, when a group emphasizes job preparation over say the transmission of classical knowledge or the general education requirement. For most liberal arts faculty the liberal learning model wins over the vocational model. The issue is whether the program of instruction in liberal arts can center on both a general education orientation and vocational pursuits. The former would provide understanding of and appreciation for one's own self, the society and the timeless values that shape human culture, while the latter would focus on skill development appropriate to professional and vocational pursuits. Whether the issue can be resolved that simply depends on faculty members.

Removing the discussion from the academic ranks sheds more light on greater issues. Even if faculty members are not dissuaded from their commitment to the liberal model, the students are. There appears now to be a major shift of students majoring in liberal arts to career-related fields. Moreover, there are too many graduates in liberal arts who can not find jobs in the traditional areas of employment. From 1960 until 1980 the number of majors in liberal arts tripled (368,000 to 1,005,000 bachelor degree graduates). Simultaneously, traditional employment in government, education, and social services has declined.

It is the thesis of this paper that faculty members can serve a specialized role as career advisors to liberal arts majors. They are the

link between students and their course of study. One way for faculty members to become familiar with and contribution to the possible employment of their graduates is through cooperative education. In order to solve the problem of employment and assist students faculty must become convinced that such an effort is truely worth it.

From a pragmatic view it makes sense that faculty members become more involved in the placement of their graduates. After all student enrollments affect full time faculty equivalence. That approach has less appeal than the educational one. Recently Ernest Boyer of the Carnegie foundation argued that the finest institutions of today Cambridge and Harvard were founded to prepare students for vocations. Further, Boyer advocates that we in education not dichotomize education for learning from education for work. Rather educators should seek to combine the two. Afterall he states that career choices and pursuits reflect our values and shape our liv

For those prepared to make the decision of solving the problem through cooperative education programming several points must be made. These are that faculty members must recognize their added responsibilities, seek an adequate reward, and use available resources in order to accomplish the objective. There are investments, costs and rewards in the process. How the equation comes out depends upon the approach that faculty members take.

Added Responsibility

Most professors in the liberal arts were trained to teach their discipline and not much else. If their discipline has an applied component, then the transition is much easier. If not then more work is required.

Technical writing in the fields of journalism, english or speech communications is an example of an applied orientation in the liberal arts. But even here for faculty members to supervise learning experiences in cooperative education may require additional responsibilities than their present job description. In fact, even those faculty with applied majors may take on responsibility for which they will be unprepared for. For example, a preparatory field experience class, job development, and learning objectives related to work assignment may all be new experiences for the participating faculty members.

These demands on the faculty should change their ideas about their concepts of a faculty. Afterall role patterns correlate with concept, expectation and demands. What the person thinks a faculty member is to do is affected by what is expected by others such colleagues, and what they ultimately do in that position. The impact of participation in cooperative will certainly change the image a faculty member has of the role "professor." This experience can be an excellent time for personal and professional growth and development. Moreover, the student will benefit from the growth experience of the faculty member. These experiences will be passed on to those in classes with these faculty members. Finally, the students on the coop placement will also benefit. The student will test his or her career objectives, develop professional work habits, improve human relations skills, and make a smoother transition into full-time employment.

Adequate Rewards

With the new demands and changes will also come rewards. Faculty members need to understand the benefits that are theirs for participation in the cooperative education program. Some of these are the privilege of educating the whole person for life, assisting students during their transition periods, keeping enrollments up in their departments, maintaining

stability for job security, consulting work, creative teaching opportunities, aiding placement of department graduates, and encouraging positive relationships with campus and the business community.

Some of these will happen naturally, but most will not. The individual faculty member should develop his or her own strategy about what constitutes an adequate reward. For some faculty members the reward is intrinsic- the sense of helping students and doing a good job in solving the employment problem etc. In other cases where there is pressure for professional competence documentation is important. Here the faculty person must try to relate the assignment in coop with the rewards of the university. Students placed in the community and business sector have excellent contacts on current research projects. These can be turned in joint research ventures. Even students on coop work assignments have conducted some excellent research projects which,in turn, become papers in professional meetings. Most professional societies are interested in the issues of developing coop in that particular discipline. The point is to make this involvement with coop, a rewarding one for each faculty person that is involved.

Available Resources

Faculty members participating in coop have more resources available to them than they normally recognize. Not only are there new networks established on campus, but they also extend off campus as well. The coop movement and philosophy as an academic and educational experience is system wide. It cuts across campus so that a faculty member is in contact with students that are goal oriented, administrators who control budgest, and with a host of people off campus who respect them and are willing to work with them. The faculty who sees this potential and uses will be quite sucessful in really pulling off a system wide impact.

Conclusion

Dr. Malcolm Knowles recently stated that the goal of education to produce a knowledgeable person is no long applicable. According to him the person must be competent, that is he or she must be able to apply knowledge and skill to a wide variety of situations. To do this knowledge must be applied. Coop is theory with practice. It assumes that students learn best by deliberate alternating their educational experience with an off campus learning experience.

The liberal arts dilemma can be resolved if faculty members get involved in problem solving. One solution is for faculty to become more concerned about marketing the liberal arts graduates. Cooperative education is an excellent place to begin.

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FUTURE TRENDS IN TECHNICAL COMMUNICATION - A Brief Look in Both Directions

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Friends University, 1938-9
Wichita State University, 1968-9

Tom Warren refers to me as his contact with the real world. I'm not sure that's a valid assumption; the worlds aren't that far apart. The main difference between technical writing in industry and in the academic world is that you can get fired faster in industry, for there's no such thing as tenure.

In that connection, I want to draw your attention to the editorial in the latest issue (Second Quarter, 1979) of Technical Communication. It's on this very subject and I'd like all of you to read it and ponder over it, and pass it on to your students. It's very much to the point and describes real situations, believe me. Looking back on 29 years in the business, I can add a fervent "Amen!"

I planned, to start with, to give you a little background on technical communication and its history as a discipline, but I'm beginning to think you may already know more about that than I do. There is one point I would like to make, though, and that is that until shortly after World War II, technical communication was not recognized as a discipline in its own right. It was simply something people did as a part of their regular work. Engineers wrote up their experiments and findings. People, usually teams, wrote procedures and instruction manuals in industry.

I brought along a couple of samples from my collection of technical communication curiosities. One is a handbook on machinery for boys, published by Harpers in 1909, and the other a little pamphlet on pruning furit trees, published in 1906 by a nursery magazine. The first was written by a mechnical engineer and the second by a professor of horticulture. I'm sure neither author fancied himself a technical communicator, but that's what both were doing.

However, at the beginning of World War II we had an enormous explosion of technology and a great many people had to be trained very quickly to use and maintain some very sophisticated equipment that often enough was no more than half developed. So there was an enormous demand for training manuals and a lot of people began producing them who were not necessarily engineers or scientists, or people who had done technical writing before. And that situation persisted, primarily in the defense industries, into the 1950's, when I got involved in it.

Even then, technical communication was not generally recognized as a separate discipline; my first job classification was engineering clerk, although I was editing and laying out manuals. And I really didn't recognize, myself, what we were doing until I happened across one of Jay Gould's little pamphlets about the program at Rensselaer Polytech.

About that item, some of you may recall, we went through quite a flap about "publications engineers" and the qualifications for a technical communicator: technical expert or language expert? The question is still around, unfortunately. For example, the engineering department of one large aircraft manufacturer until quite recently had an inflexible rule: if you

had an engineering degree you were an engineer and on salary. Otherwise, you were a clerk and punched a clock; ability had nothing to do with it. I suspect the question may never be resolved to every one's satisfaction.

Then, there's STC itself: we went through four gyrations of what to call ourselves before we settled on Society for Technical Communication. I think the final choice was a wise one, because our discipline will continue to evolve. The role of technical writers as only writers, people who put words on paper, is going to diminish. We have reached the point where the single channel of language, words on paper alone, no longer will convey all the information needed. Indeed, it never has, very well. I have struggled, and I'm sure all of you have, too, with the situation that simply can't be described with words, with hanging more modifiers on a noun to nail down in a pile. So we have always turned to some other medium, a drawing or a photograph, when words failed.

Today, the technology that has so overrun language has also provided some new and exciting supplementary channels that can help solve the communication problem. The one that has impressed me most is the video camera. Some years ago, I had the opportunity to attend an STC meeting at Colorado State University and see a demonstration of video tape as a teaching medium. One of their programs particularly impressed me: At that time, they had awarded several hundred masters' degrees, primarily in engineering disciplines, to people who set foot on the CSU campus for the first time at Commencement, to get their degrees. With video players spotted around strategically, not only in Colorado but as far away as Florida, they simply sent out video-

tapes of their lectures and course work; the students worked at their own pace, mailed in their assignments and returned each casette when they finished it, and got the next course segment in exchange.

We also were shown a videotape that impressed me from the technical communication aspect: A surgical procedure in the college of veterinary medicine. The camera was placed directly over the operating table and got a close-up view, with full color and action along with the surgeon's narration. It was a view that no student standing in a group around the operating table could have seen.

There is another advantage to these taped presentations: the opportunity to edit and polish before they are used and to update the material quickly and easily. (This paper is being prepared with the aid of a verbatim transcript, a humbling experience. Those who heard me, and remember, will realize that I am making full use of that advantage.)

Audio-visual and video techniques are being widely used in industry, also, for both sales and training. I have seen video-tape presentations that could be set up on a technician's workbench. Also, I brought along a little gimmick to show you, although I won't play it. Recently, I bought a new lavatory faucet and packed with it was a little pamphlet consisting mainly of pictures and this little phonograph record with step-by-step instructions for taking off the old faucet and putting on the new one. I probably could have figured out how to do it but the recorded instructions and the illustrations in the booklet,

keyed to the narration, made the job almost a snap. My biggest complaint, and this is almost universal, is the unctuous tone and diction of the narrator. He sounds more like a funeral director than a plumber.

I predict that we are going to see many more innovations like this and, perhaps eventually, videotapes and disks replacing manuals and instruction sheets. That's why I think the role of the technical writer is going to change so profoundly. In addition to language, we will have to learn to think in terms of scene sequences and learn something of lighting, camera angles and direction. Our writing style will change, too, becoming less rigid and formal when we can use inflection, pitch, stress and change of pace to convey meaning.

On the subject of language, I have a challenge for you as educators: whenever you attend teachers' meetings, go with pick handles over your shoulders to use on your colleagues in the elementary and high schools. That colleges should need freshman courses in "remedial reading" is a disgrace; and anyway, college is too late. Reading and writing are basic skills that should be taught in the elementary grades as thoroughly as they once were. Written homework, and I mean questions answered in phrases and sentences, were expected of us by the time I reached the fourth grade, not only in English but in geography, history, and other subjects. And there was no such thing as "social promotion". Our children and grandchildred are being cheated by the school system and it's time to put a stop to it. I have one final thought that you might give your students: Along with communication skills and some general background in the sciences,

a successful technical communicator needs an intense and continuing curiosity about the physical world and man's place in it and a good deal of logical imagination, the ability to visualize actions and cause and effect relationships. All technical communication is concerned, to greater or lesser degree, with man's interaction with the world; and ultimately, whether he does it well or badly. That should be challenge enough for anybody.

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